CITY OF CANTON

CLEVELAND AVENUE NW PAVING PROJECT

CITY OF CANTON, OHIO

G.P. 1109

PID NO. 86877

THIS IS AN AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 PROJECT.

SEE BOTH PLANS AND SPECIFICATIONS FOR REQUIREMENTS UNIQUE TO THIS FUNDING SOURCE.

PLAN PREPARED BY:

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

CLEVELAND AVE. NW PAVING PROJECT

PID NO. 86877

GENERAL PROJECT NO. 1109

RAILROAD INVOLVEMENT NONE

END PROJECT
STA. 305+86

BEGIN PROJECT
STA. 135+20

LOCATION MAP

PORTION TO BE IMPROVED

CITY OF CANTON
CLEVELAND AVENUE NW PAVING PROJECT
CITY OF CANTON, OHIO

PROJECT DESCRIPTION

THE PROJECT SHALL CONSIST OF MILLING AND RESURFACING THE ROADWAY, INSTALLATION OF PAVEMENT MARKINGS AND INSTALLATION OF ADA COMPLIANT CURB RAMPS.

PROJECT EARTH DISTURBED AREA: < 1.0 ACRES
ESTIMATED CONTRACTOR EARTH DISTRUBED AREA: < 1.0 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: 0 ACRES

2008 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION AND THE CITY OF CANTON, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

INDEX OF SHEETS:

DESIGN DESIGNATION

CURRENT A.D.T. (2009)	= 21,100
DESIGN YEAR A.D.T. (2030)	= 21,100
DESIGN SPEED	= 35 MPH
LEGAL SPEED	= 35 MPH
FUNCTIONAL CLASSIFICATION	= URBAN PRINCIPAL ARTERIAL

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1–800–362–2764(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON–MEMBERS
MUST BE CALLED DIRECTLY

PLAN PREPARED BY:

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489–3381

ENGINEERS SEAL:

STATE OF OHIO
NICHOLAS LOMMERS
E-69140
REGISTERED PROFESSIONAL ENGINEER

DATE: 3/25/10

STANDARD CONSTRUCTION DRAWINGS

ODOT	ODOT		CANTON		
MH–1.2 1/20/06	MT–35.10 4/20/01		STD. DWG. 15		
	MT–95.31 4/17/09		STD. DWG. 18		
DM–1.1 4/21/06	MT–95.32 4/17/09		STD. DWG. 19		
	MT–95.60 1/16/09		STD. DWG. 20		
BP–3.1 10/19/07	MT–99.20 1/16/09		STD. DWG. 28		
BP–5.1 7/28/00	MT–101.60 4/17/09		STD. DWG. 29		
BP–7.1 1/19/07	MT–101.90 1/16/09		STD. DWG. 30		
BP–7.2 1/19/07	MT–105.10 1/16/09		STD. DWG. 32		
			STD. DWG. 42		
TC–71.10 1/15/10			STD. DWG. 43		
TC–73.10 1/19/01			STD. DWG. 44		
TC–82.10 4/20/02			STD. DWG. 46		

SUPPLEMENTAL SPECIFICATIONS

ODOT	
800	4/17/09
802	1/16/09

CANTON
01–00
02–00
04–01
05–01

SPECIAL PROVISIONS

CITY OF CANTON, OHIO
MAYOR
WILLIAM J. HEALY

DIRECTOR OF PUBLIC SERVICE
WARREN PRICE

DIRECTOR OF PUBLIC SAFETY
THOMAS REAM

WARD COUNCIL MEMBERS
THOMAS E. WEST, WARD 2
PATRICK BARTON, WARD 7
MARK BUTTERWORTH, WARD 8
BRIAN HORNER, WARD 9

CITY CIVIL ENGINEER
DANIEL J. MOEGLIN, P.E.

APPROVED _____
DATE _____ *CITY ENGINEER, CITY OF CANTON*

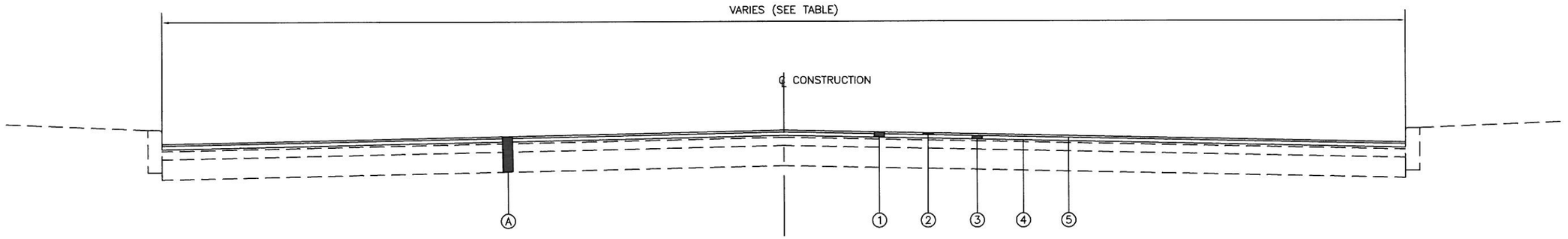
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489–3381

CLEVELAND AVE. NW PAVING PROJECT

PID NO. 86877

GENERAL PROJECT NO. 1109

RAILROAD INVOLVEMENT NONE



LEGEND

1. 254 – PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN
2. 424 – 3/4" FINE GRADED POLYMER ASPHALT CONCRETE, TYPE A
3. 448 – 1 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64–22
4. 407 – TACK COAT, 702.13
5. 407 – TACK COAT FOR INTERMEDIATE COURSE

A. EXISTING COMPOSITE PAVEMENT (BRICK OR CONCRETE UNDER ASPHALT)

CLEVELAND AVENUE			
STATION		WIDTH	LENGTH
FROM	TO	(FEET)	(FEET)
135+20	141+10	44	590
141+10	144+10	25–44	300
144+10	190+00	44	4590
190+00	191+92	44–56	92
191+92	203+72	56	1180
203+72	206+38	44–56	266
206+38	207+74	44	136
207+74	212+84	44–57	510
212+84	219+01	55	617
219+01	221+52	55–66	251
221+52	244+05	55	2253
244+05	246+26	40–55	221
246+26	252+87	40	661
252+87	261+10	40–55	823
261+10	273+15	40	205
273+15	282+13	40–54	898
282+13	305+86	40	2373
McKINLEY AVENUE			
135+72.70	144+10	28–52	834

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489–3381

TYPICAL SECTION
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
	DESCRIPTION	DATE	BY

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A
SHEET 2 OF 22

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: TYPICAL SECTION

PRECONSTRUCTION INCIDENTALS

PROJECT SPECIFICATIONS/REQUIREMENTS:

ALL WORK REQUIRED TO COMPLETE THIS IMPROVEMENT SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATIONS/REQUIREMENTS OF THE CITY OF CANTON AND THE 2008 EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, EXCEPT AS HEREIN AMENDED. IN THE CASE OF A CONFLICT BETWEEN THE CITY OF CANTON AND THE OHIO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS/REQUIREMENTS, THE CITY OF CANTON REQUIREMENTS WILL TAKE PRECEDENCE, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.

THE CONTRACTOR SHALL COMPLY WITH THE CITY OF CANTON SUPPLEMENTAL SPECIFICATION 01-00 PROJECT DOCUMENTATION AND SUBMITTAL REQUIREMENTS.

ADMINISTRATIVE REQUIREMENTS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY COMPLYING WITH ALL THE ADMINISTRATIVE DUTIES HEREIN CONTAINED.

THE CONTRACTOR SHALL DESIGNATE TO THE CITY AN EMPLOYEE RESPONSIBLE FOR CORRESPONDENCE, NOTIFICATIONS, AND SUBMITTALS PERTINENT TO THE PROJECT.

PRECONSTRUCTION MEETING:

A PRECONSTRUCTION MEETING WITH THE CONTRACTOR, REPRESENTATIVES OF ALL UTILITY COMPANIES, THE CITY OF CANTON ENGINEERING DEPARTMENT AND THE CITY OF CANTON WATER DEPARTMENT IS REQUIRED FOR THIS PROJECT PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.

THE CITY ENGINEER WILL CONTACT THE CONTRACTOR TO ARRANGE A MEETING DATE. THE CITY ENGINEER WILL CONTACT THE ABOVE AGENCIES TO CONFIRM THE MEETING DATE.

PROJECT SAFETY:

THE CONTRACTOR SHALL MAINTAIN A SAFE WORKING ENVIRONMENT AT THE PROJECT SITE AT ALL TIMES. THE CONTRACTOR SHALL PROPERLY SUPPORT AND/OR MAINTAIN ALL EXCAVATIONS PER APPLICABLE SAFETY REQUIREMENTS AND COMPLY WITH ALL O.S.H.A. REGULATIONS. ADEQUATE BARRICADES, WARNING LIGHTS, SIGNS, FENCING, ETC. SHALL BE ERECTED AROUND THE CONSTRUCTION AREA DURING ALL NON-WORKING HOURS TO ALERT PERSONS OF THE POTENTIAL DANGER ASSOCIATED WITH THE AREA UNDER CONSTRUCTION AS WELL AS TO PREVENT ACCESS BY UNAUTHORIZED PERSONNEL TO THE CONSTRUCTION SITE/AREA. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF THE GENERAL PUBLIC AS WELL AS ALL CONSTRUCTION PERSONNEL. PUBLIC STREETS SHALL BE KEPT CLEAN AND FREE OF DEBRIS (MUD, STONE, ETC.) AT ALL TIMES. THE CONTRACTOR SHALL ALERT ALL LOCAL EMERGENCY AGENCIES (FIRE, POLICE, AMBULANCE, ETC.) OF THE NATURE OF THE PROPOSED PROJECT PRIOR TO BEGINNING AND CONSTRUCTION ACTIVITY. ACCESS FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES.

UNDERGROUND UTILITIES:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS WERE OBTAINED BY FIELD OBSERVATIONS, FROM EXISTING RECORDS, AND/OR FROM THE OWNERS OF THE RESPECTIVE UTILITIES. THE INFORMATION AS SHOWN IS BELIEVED TO BE CORRECT; HOWEVER, THE COMPLETENESS AND ACCURACY OF THIS INFORMATION CANNOT BE GUARANTEED. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT ALL THE VARIOUS UTILITY COMPANIES (PUBLIC AND PRIVATE) TO VERIFY THE EXISTENCE, LIMITS AND/OR LOCATION OF ANY UTILITIES WHICH MAY BE ALONG THE ROUTE OR WITHIN THE VICINITY OF THIS IMPROVEMENT.

PROJECT COMPLETION:

THE WORK EMBRACED IN THIS CONTRACT SHALL BE COMPLETE 120 CALENDAR DAYS AFTER THE NOTICE PROCEED. AN INTERIM COMPLETION DATE OF JULY 16, 2010 SHALL BE EFFECTIVE FOR WORK BETWEEN 12TH STREET AND 28TH STREET (STA. 135+20 TO STA. 210+65). THE MINIMUM ACCEPTABLE WORK TO BE COMPLETED IN THIS SECTION BY THE INTERIM DATE INCLUDES ALL PAVING PROCEDURES, CURB RAMP INSTALLATION, TEMPORARY PAVEMENT MARKINGS, AND CASTING ADJUSTMENTS/RECONSTRUCTIONS. THE INTERIM COMPLETION DATE (JULY 16, 2010) SHALL NOT BE ADJUSTED BY WEATHER DAYS; HOWEVER, THE CONTRACTOR WILL BE GUARANTEED 20 WORKING DAYS FROM THE NOTICE TO PROCEED (NTP) TO COMPLETE THE WORK BEFORE LIQUIDATED DAMAGES ARE ASSESSED. WEATHER DAYS MAY BE APPLIED TO THE END OF THE 120 DAY COMPLETION DATE.

UTILITY NOTIFICATION:

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING OPERATIONS ON THIS PROJECT, THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER, THE REGISTERED UTILITY PROTECTION AGENCY/SERVICE, AND THE OWNERS OF ANY OTHER UTILITIES (PUBLIC AND/OR PRIVATE) THAT MAY HAVE UTILITY LINES OR FACILITIES WITHIN THE VICINITY OF THIS PROJECT BUT WHO ARE NOT MEMBERS OF THE REGISTERED UTILITY PROTECTION SERVICE. THE OWNERS OF ANY UNDERGROUND UTILITY FACILITY SHALL, WITHIN 48 HOURS AFTER NOTICE IS RECEIVED, EXCLUDING SATURDAYS, SUNDAYS AND OTHER LEGAL HOLIDAYS; STAKE, MARK OR OTHERWISE DESIGNATE THE EXISTENCE AND/OR LOCATION OF THE UNDERGROUND UTILITY FACILITIES IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING AND/OR LOCATING SHALL BE COORDINATED TO STAY APPROXIMATELY TWO WORKING DAYS AHEAD OF THE PLANNED CONSTRUCTION.

OHIO UTILITIES PROTECTION SERVICE: 1-800-362-2764 (CONTACT NON-MEMBERS DIRECTLY).

THE PRIMARY UTILITIES WITHIN THE CITY OF CANTON AREA:

NATURAL GAS DISTRIBUTION
DOMINION EAST OHIO GAS
320 SPRINGSIDE DRIVE
AKRON, OHIO 44333
330-644-2409
ATTN: MARY LONG
EMERGENCY NO.
1-800-521-4400

TELEPHONE
AT&T
50 WEST BOWER STREET
AKRON, OHIO 44308
330-384-8057
ATTN: JIM BUETEL
EMERGENCY NO. - 24 HRS.
1-800-572-4545 OPTION#4

COMMUNICATIONS CABLE
TIME WARNER CABLE
5520 WHIPPLE AVE. N.W.
NORTH CANTON, OHIO 44720
330-494-9200, EXT. 3087
ATTN: TIM KNIGHT

ELECTRIC
AMERICAN ELECTRIC POWER
301 CLEVELAND AVE. S.W.
P.O. BOX 24400
CANTON, OHIO 44701-4400
330-438-7762
ATTN: KEN HUOT
EMERGENCY NO.
1-800-672-2017

CITY OF CANTON
SANITARY AND STORM SEWER
CITY ENGINEER'S OFFICE
2436-30TH ST. N.E.
CANTON, OHIO 44705
ATTN: DAN MOEGLIN
330-489-3381

WATER
WATER DEPARTMENT
2664 HARRISBURG RD. N.E.
CANTON, OHIO 44708
330-489-3310
ATTN: LEWI MILLER

STARK COUNTY SANITARY SEWER
STARK COUNTY SANITARY
ENGINEERING DEPARTMENT
1701 MAHONING RD. N.E.
CANTON, OHIO 44705-7906
330-451-2303
ATTN: PAUL HOOT

TRAFFIC INTERCONNECT
CITY ENGINEER'S OFFICE
2436-30TH ST. N.E.
CANTON, OHIO 44705
330-489-3370
ATTN: NICK LOUKAS

NATURAL GAS TRANSMISSION
DOMINION EAST OHIO GAS
320 SPRINGSIDE DROVE
AKRON, OHIO 44333
330-664-2447
ATTN: DAVE CROFT

THE CITY ENGINEER'S OFFICE IS TO BE CONTACTED DIRECTLY FOR SANITARY AND STORM SEWER AND TRAFFIC INTERCONNECT FACILITIES LOCATION: 330-489-3381.

EXPLORATORY BORINGS:

EXPLORATORY SOIL BORING INFORMATION IS NOT THE RESPONSIBILITY OF THE CITY OF CANTON. IT IS THE CONTRACTOR RESPONSIBILITY TO REVIEW ANY AND ALL INFORMATION AVAILABLE. IF CONTRACTOR REQUESTS TO DRILL AND OR EXCAVATE WITHIN THE CITY'S R/W, THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AT LEAST 3 WORKING DAYS PRIOR TO THIS WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY NOTIFICATION, AS SPECIFIED, ALL TRAFFIC CONTROL, PREMIUM BACKFILL, COMPACTION AND RESTORATION, AS NECESSARY.

CONTINGENCY QUANTITIES:

WHEN SPECIFIED ON PLANS OR SPECIFICATIONS, CONTINGENCY QUANTITIES ARE TO BE PERFORMED ONLY UNDER DIRECTION OF THE CITY ENGINEER. THE DEVELOPER/CONTRACTOR SHALL NOT ORDER ANY CONTINGENCY MATERIAL OR PERFORM ANY WORK UNTIL DIRECTED BY THE ENGINEER. THE ACTUAL WORK LOCATION AND QUANTITIES FOR SUCH ITEMS SHALL BE DOCUMENTED BY THE DEVELOPER/CONTRACTOR AND THE ENGINEER.

CONSTRUCTION INCIDENTALS

PLAN DISCREPANCIES:

ANY DISCREPANCIES FROM THE PLAN INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER SO THAT THE APPROPRIATE ADJUSTMENTS IN ALIGNMENT AND/OR GRADE MAY BE MADE PRIOR TO THE START OF CONSTRUCTION OR THE CONTINUATION OF THE ABOVE..

FAILURE BY THE CONTRACTOR TO VERIFY AND/OR DETERMINE EXISTING INFORMATION AS INDICATED WILL RESULT IN THE CONTRACTOR BEING RESPONSIBLE FOR ANY CHANGES NECESSARY TO COMPLETE THE WORK SPECIFIED WITHOUT ADDITIONAL COMPENSATION.

VERIFICATION OF UNDERGROUND UTILITIES:

TTHE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXISTENCE AS WELL AS THE ACTUAL LOCATION, ALIGNMENT, AND ELEVATIONS OF ALL EXISTING UTILITIES/FACILITIES WITHIN AND/OR ADJACENT TO THE GENERAL LIMITS OF THESE IMPROVEMENTS INCLUDING WATERLINES, SANITARY AND STORM SEWERS, GAS LINES, COMMUNICATION LINES/BANKS, ELECTRIC LINES, ETC. THIS MAY REQUIRE EXPLORATORY EXCAVATIONS TO BE PERFORMED BY THE CONTRACTOR FOR WHICH HE WILL NOT BE REIMBURSED. THE CONTRACTOR SHALL NOT ASSUME THAT EXISTING UTILITIES/CONDUITS WERE INSTALLED AT TYPICAL/STANDARD DEPTHS OR AT UNIFORM SLOPES/GRADES/DEPTHS BETWEEN ACCESS POINTS (CATCH BASINS, MANHOLES, JUNCTION CHAMBERS, ETC.)

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT, THE CONTRACTOR SHALL UNCOVER AND DETERMINE THE ELEVATION, SIZE. SLOPE/GRADE AND MATERIAL OF EXISTING UNDERGROUND UTILITIES/CONDUITS ALONG THE ROUTE OF CONSTRUCTION, AS SHOWN ON DRAWINGS OR MARKED AT THE TIME OF CONSTRUCTION BY THE UTILITY OWNER.

PROTECTION OF UTILITIES:

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT AND SUPPORT EXISTING UTILITIES ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS AS APPROVED BY THE OWNERS OF THE UTILITY AND THE CITY ENGINEER..

THE CONTRACTOR SHALL BE RESPONSIBLE TO CLOSELY COORDINATE THEIR WORK WITH ALL UTILITY COMPANIES. ANY POTENTIAL DELAYS WILL NOT BE THE RESPONSIBILITY OF THE CITY.

THE CONTRACTOR SHOULD EXPECT AT A MINIMUM ONE SANITARY SEWER LATERAL, ONE ROOF DRAIN, ONE WATER SERVICE, AND ONE GAS SERVICE FOR EACH LOT. ANY OF THE ABOVE UTILITIES DAMAGED DUE TO THE CONTRACTOR'S WORK SHALL BE RESTORED TO THE UTILITY OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL ADEQUATELY SUPPORT, SHORE UP, OR OTHERWISE PROTECT UNDERGROUND UTILITIES WHENEVER EXPOSED IN THE TRENCH. SUPPORTS SHALL BE EXTENDED A MINIMUM OF 12 INCHES INTO UNDISTURBED EARTH EACH SIDE OF TRENCH. CONTRACTOR SHALL BAND OR TIE UTILITY TO BRIDGING FOR ITS FULL LENGTH. WHERE BRIDGING CANNOT BE SUPPORTED BY A FIRM FOUNDATION, CONTRACTOR SHALL PROVIDE VERTICAL SUPPORT, INCLUDING ANY LATERAL BRACING NECESSARY TO PROVIDE FIRM SUPPORT.

ABOVE GROUND (AERIAL) UTILITIES, INCLUDING, BUT NOT LIMITED TO, POWER, TELEPHONE AND CABLE TELEVISION, ETC., SHALL REMAIN IN SERVICE AT ALL TIMES. ANY ANTICIPATED DISRUPTION OF SERVICE SHALL BE WITH THE FULL KNOWLEDGE OF THE UTILITY COMPANY AND REQUIRES ADVANCE NOTICE TO AFFECTED USERS. REMOVAL OF GUY WIRES AND HOLDING OF POLES SHALL BE COMPLETED AS REQUIRED TO COMPLETE THE WORK, SHALL BE AS AGREED UPON BY THE UTILITY COMPANY AND CONTRACTOR, AND SHALL BE AT THE EXPENSE OF CONTRACTOR.

MAINTENANCE OF UTILITY SERVICES:

THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN UTILITY SERVICES AT ALL TIMES.

WATER SERVICE MAY BE INTERRUPTED FOR LIMITED PERIODS (4 HOURS MAXIMUM). NO SHUT DOWN SHALL OCCUR WITHOUT WRITTEN PERMISSION OF THE CITY OF CANTON WATER DEPARTMENT. PROPERTY OWNERS AFFECTED BY APPROVED INTERRUPTED SERVICE SHALL BE NOTIFIED 48 HOURS IN ADVANCE BY THE CONTRACTOR.

STORM SEWER AND SANITARY SEWER SERVICES SHALL BE MAINTAINED WITHOUT INTERRUPTION, UNLESS APPROVED BY THE CITY ENGINEER.

IN THE EVENT THAT CONSTRUCTION DISRUPTS THE FLOW OF A SANITARY SEWER, THE CONTRACTOR SHALL IMMEDIATELY RECTIFY THE DISRUPTED SEWER BY EITHER TEMPORARILY FLUMING WITH MATERIALS ACCEPTABLE TO THE ENGINEER OR BYPASSING WITH PUMPS. COST OF MAINTAINING AND REPAIR OF SANITARY SEWERS DISTURBED BY CONSTRUCTION SHALL BE AT THE CONTRACTOR'S EXPENSE.

CONSTRUCTION NOISE:

CONSTRUCTION NOISE ASSOCIATED WITH ANY IMPROVEMENT PROJECT, SHALL BE LIMITED TO LEVELS COMMENSURABLE WITH ADJOINING LAND AND THEIR ASSOCIATED USAGE AS DETERMINED BY THE CITY ENGINEER. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, ANY POWER-OPERATED CONSTRUCTION-TYPE DEVICE SHALL NOT BE OPERATED BETWEEN THE HOURS OF 7:00 P.M. AND 7:00 A.M., UNLESS AUTHORIZED BY THE CITY ENGINEER.

CLEANUP AND DISPOSAL:

DURING WORK, KEEP ROADS CLEAN AND WORK AREAS IN AN ORDERLY CONDITION. AT THE END OF THE PROJECT, ALL STREETS AND ROADWAYS EFFECTED BY THIS PROJECT SHALL BE SWEPT.

ALL WASTE MATERIAL GENERATED BY THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE OFFSITE AT NO COST TO THE CITY.

OPEN TRENCH CONSTRUCTION AND TRENCH PROTECTION:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION /TRENCHING PRACTICES FOR THE PROPOSED IMPROVEMENT, OR AS FURTHER SHOWN ON THE PLANS AND SPECIFICATIONS.

THE CONTRACTOR SHALL FOLLOW ALL LOCAL AND STATE REGULATION, INCLUDING FEDERAL REGULATION, PART 1926, SUB PART P FOR ALL APPLICABLE REQUIREMENTS AND RESPONSIBILITIES.

PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER OF THE PROJECT'S ASSIGNED "COMPETENT PERSON" IN OSHA EXCAVATION STANDARDS.

PROVIDE TRENCH PROTECTION USING A TRENCH BOX, WOOD SHEETING AND BRACING, OR SUCH OTHER METHOD AS DETERMINED BY CONTRACTOR TO MAINTAIN A SAFE WORKING ENVIRONMENT. ALL EXCAVATIONS SHALL COMPLY WITH APPLICABLE LAWS AND REGULATIONS (FEDERAL, STATE AND LOCAL).

FOR WOOD SHEETING AND BRACING USE SOUND LUMBER SUITABLE FOR THE PURPOSE INTENDED, AND ARRANGE SO AS TO SUPPORT THE TRENCH WALLS AND EXISTING STRUCTURES AND UTILITIES.

SHEETING AND BRACING SHALL BE REMOVED BY THE CONTRACTOR AFTER PLACING AND COMPACTING BACKFILL TO A LEVEL AT LEAST 2 FEET ABOVE THE PIPE TOP. DO NOT PULL SHEETING IN INCREMENTS EXCEEDING 3 TO 4 FEET IN ORDER TO AVOID THE DANGER OF BREAKING THE BURIED UTILITY DUE TO THE WEIGHT OF THE BACKFILL. UPON REMOVAL, IMMEDIATELY FILL AND RECOMPACT VOIDS LEFT DUE TO SUCH REMOVAL.

TRENCH CLOSING AND TEMPORARY TOPPING:

THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE THE NECESSARY LEVELS OF PROTECTION AND SAFEGUARDING OF ALL OPEN TRENCHES, WHEN WORK IS EITHER COMPLETED AT THE END OF THE DAY OR SUSPENDED FOR ANY OTHER REASON.

AS A MINIMUM, THE CITY REQUIRES ALL TRENCHES TO BE TOPPED WITH 4" OF ODOT 304 LIMESTONE FOR TRENCHES WITHIN EXISTING ROADWAY PAVEMENTS WHEN THE ROADWAY WILL BE OPENED TO VEHICULAR TRAFFIC PRIOR TO PAVEMENT REPLACEMENT.

THE TRENCH TOPPING MATERIAL SHALL BE ROLLED OR OTHERWISE COMPLETED AND BE FURNISHED FLUSH WITH THE EXISTING ADJOINING PAVEMENT.

DUST CONTROL:

THE CONTRACTOR SHALL FURNISH AND APPLY WATER AND CALCIUM CHLORIDE FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. SUFFICIENT QUANTITIES OF CALCIUM CHLORIDE SHALL BE STORED ON THE JOB SITE AT ALL TIMES TO BE USED FOR DUST CONTROL.

TESTING OF UTILITIES:

ALL NEWLY CONSTRUCTED WATERLINES AND SANITARY SEWERS (INCLUDING LATERALS) MUST BE INSTALLED AND TESTED IN ACCORDANCE WITH APPLICABLE STANDARDS (AWWA, ETC.), PER THE OHIO ENVIRONMENTAL PROTECTION AGENCY AND PER THE REQUIREMENTS OF THE CITY OF CANTON CITY AND WATER ENGINEERING DEPARTMENT.

PRESERVATION OF EXISTING STRUCTURES:

THE CONTRACTOR SHALL PERFORM WORK SO AS TO NOT DISTURB, DAMAGE OR DESTROY ANY MAILBOX, PAPER BOX, TELEPHONE OR POWER POLES, SIGNS, FENCES, RETAINING WALLS, LANDSCAPING ITEMS, ETC. ANY ITEM DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ANY ITEM DISTURBED OR IN CONFLICT WITH THE WORK TO BE PERFORMED SHALL BE REMOVED AND RESET AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIFICATIONS.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

GENERAL NOTES
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS	DESCRIPTION	DATE	BY

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: GENERAL NOTES 1

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A

CONSTRUCTION INCIDENTALS (CONTINUED):

SALVAGED CASTINGS:

WHEN DIRECTED BY THE CITY ENGINEER, ALL CASTINGS SHALL BE CAREFULLY REMOVED AND STORED ON SITE OR DELIVERED TO A LOCATION DESIGNATED BY THE CITY ENGINEER.

CONSTRUCTION LAYOUT:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT UTILIZING PERTINENT PLAN DATA. THE CITY ENGINEER WILL NOT BE RESPONSIBLE FOR STAKING HORIZONTAL OR VERTICAL CONTROL. CONSTRUCTION LAYOUT SHALL BE IN ACCORDANCE WITH ODOT 623 CONSTRUCTION LAYOUT STAKES.

AT THE CITY ENGINEER'S REQUEST THE CONTRACTOR SHALL MAKE AVAILABLE ALL SURVEY FIELD NOTES FOR REVIEW.

EXISTING MONUMENTATION:

THE CONTRACTOR SHALL PRESERVE ALL CORNERSTONES, IRON PINS, CONCRETE MONUMENTS AND/OR ANY TYPE OF LAND MONUMENT. (HE SHALL HAVE ALL MONUMENTS IN THE PROXIMITY OF THE WORK REFERENCED.) THE CONTRACTOR SHALL REPLACE/RESET ANY DISTURBED OR DAMAGED MONUMENTS AND SHALL FURNISH A CERTIFICATION BY A REGISTERED SURVEYOR THAT THE MONUMENTS HAVE BEEN RESTORED.

DEWATERING OPERATIONS:

WHEN DEEMED NECESSARY, THE CONTRACTOR MAY INSTALL DEWATERING EQUIPMENT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

THE PROPOSED LOCATION OF WELL POINTS, HEADER PIPE, ELECTRICAL DISTRIBUTION, GENERATORS AND DISCHARGE PIPES, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS FOR THE INSTALLATION AND SUBSEQUENT REMOVAL OF DEWATERING EQUIPMENT AS MAY BE NECESSARY PER STATE AND LOCAL GOVERNING AGENCIES.

INSTALLATION OF ALL ELECTRICAL EQUIPMENT, INCLUDING GROUNDING AND PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR SHALL PROVIDE ALL COMBUSTIBLE ENGINE DRIVEN GENERATORS WITH "HOSPITAL GRADE" MUFFLERS. MUFFLERS SHALL BE RATED, AT A MAXIMUM OF 67 dB AT 23 FEET AWAY RUNNING FULL LOAD.

INSPECTION:

ALL WORK REQUIRED FOR THIS IMPROVEMENT SHALL BE SUBJECT TO INSPECTION BY THE CITY OF CANTON OR THEIR DESIGNATED REPRESENTATIVE. THE CONTRACTOR SHALL GIVE A 48 HOUR NOTICE BEFORE STARTING ANY WORK ON THIS PROJECT AND SHALL KEEP THE CITY INFORMED OF HIS/HER CONSTRUCTION SCHEDULE. NO WORK SHALL BE PERFORMED UNLESS AN AUTHORIZED INSPECTOR IS PRESENT.

EARTHWORK / SITE WORK

EASEMENTS AND RIGHT-OF WAY:

THE CONTRACTOR SHALL STAY WITHIN THE PROPERTIES, EASEMENTS, AND/OR RIGHT-OF-WAY PROVIDED AT ALL TIMES. NO MATERIAL SHALL BE STORED NOR ANY WORK PERFORMED ON PRIVATE PROPERTY. DISTURBANCE OF EXISTING FEATURES AND/OR IMPROVEMENTS SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND AS APPROVED BY THE CITY ENGINEER/PROPERTY OWNER.

SUITABILITY OF SITE:

THE CITY OF CANTON WILL NOT BE RESPONSIBLE FOR THE TYPE AND/OR SUITABILITY OF THE MATERIAL UNDERLYING THE PROJECT SITE. THE CONTRACTOR MUST APPRAISE THEMSELVES OF ANY EXISTING SITE CONDITIONS WHICH MAY AFFECT THEIR BID OR THE PERFORMANCE OF THE REQUIRED WORK. THE CONTRACTOR SHALL PERFORM ANY INVESTIGATIONS AND/OR TESTING NECESSARY TO ADEQUATELY DETERMINE/ESTIMATE TO THEIR SATISFACTION OF ALL SITE CONDITIONS WHICH COULD AFFECT THE PERFORMANCE OF THE PROPOSED IMPROVEMENTS. THIS COULD INCLUDE BUT NOT BE LIMITED TO UNSUITABLE AND/OR UNSTABLE SOIL/SUBSURFACE CONDITIONS, ROCK, WATER (PERCHED OR FREE), SPRINGS, ETC.

REMOVAL/REPLACEMENT OF UNSUITABLE MATERIAL:

THE CONTRACTOR SHALL UNDERCUT AND REPLACE UNSUITABLE MATERIAL ENCOUNTERED DURING INSTALLATION OF THE PROPOSED UTILITIES AND ROADWAY IN ACCORDANCE WITH O.D.O.T. ITEM No. 603 AND 203, OR AS FURTHER DESCRIBED HEREIN.

IF PLANS ALLOW FOR A CONTINGENCY ITEM FOR SUCH REMOVAL/REPLACEMENT, THE CITY WILL DOCUMENT THE LOCATION OF AREAS OF SUCH REMOVAL/REPLACEMENT FOR FINAL QUANTITY TABULATION.

RESTORATION OF DISTURBED AREAS:

EXISTING DRIVES, BERMS, LAWNS, PAVEMENTS, CURBS, SIDEWALKS, SIGNS, MAILBOXES OR OTHER APPURTENANCES DISTURBED DURING CONSTRUCTION BUT NOT SPECIFICALLY DESIGNATED FOR REMOVAL/REPLACEMENT SHALL BE RESTORED TO A CONDITION EQUAL TO THAT WHICH EXISTED PRIOR TO CONSTRUCTION AND TO THE COMPLETE SATISFACTION OF THE CITY ENGINEER. RESTORATION OF EXISTING ROADWAYS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY, TOWNSHIP, COUNTY, AND/OR OTHER AGENCIES HAVING AUTHORITY. COST FOR THE RESTORATION OF THESE ITEMS WILL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR. NO PUBLIC ROADWAY SHALL BE DISTURBED WITHOUT PRIOR WRITTEN APPROVAL FROM THE GOVERNING AGENCY AND ACQUISITION OF NECESSARY PERMITS.

ROADWAY / PAVEMENT / WALK / CURB

ASPHALT CONCRETE:

CONTRACTOR SHALL SUBMIT APPLICABLE APPROVED JMF FOR ACCEPTANCE BY THE ENGINEER PRIOR TO USE. ASSOCIATED REPORTS AND DAILY PLANT PRODUCTION REPORTS SHALL BE SUBMITTED. ASPHALT DELIVERY TICKETS SHALL INCLUDE JMF NUMBER.

ASPHALT BINDER PRICE ADJUSTMENT:

THIS PROJECT WILL COMPLY WITH CMS 401.20 ASPHALT BINDER PRICE ADJUSTMENT.

AGGREGATE BASE, AS PER PLAN:

THE REQUIREMENTS OF ODOT 304 SHALL APPLY; DEVIATIONS FROM THIS ARE AS FOLLOWS;

(1) NO OPEN HEARTH BASIC-OXYGEN STEEL OR GRANULAR SLAG SHALL BE PERMITTED.

CONCRETE WALK AND DRIVE APPROACHES AS PER PLAN:

THE REQUIREMENTS OF ODOT 608 CONCRETE WALKS AND RAMPS SHALL APPLY; DEVIATIONS FROM THIS ARE AS FOLLOWS:

(1) CONCRETE MIX COARSE AGGREGATE SHALL BE LIMESTONE ONLY.

(2) EXPANSIONS JOINTS (1/2") SHALL BE PLACED AT THE TRANSVERSE JOINTS OF THE WALK AT INTERVALS NOT TO EXCEED 30 FEET IN LENGTH.

CAST IN PLACE CONCRETE CURB, AS PER PLAN:

REQUIREMENTS OF ODOT 609 SHALL APPLY; DEVIATIONS FROM THIS ARE AS FOLLOWS:

(1) CONCRETE MIX COARSE AGGREGATE SHALL BE LIMESTONE ONLY.

(2) CONSTRUCTION JOINTS FOR STAND-UP CURB AND COMBINATION CURB/GUTTER SHALL BE DOWELED. DOWELS SHALL BE (2) #5 BAR, 18" IN LENGTH EQUALLY SPACED.

(3) CURB SHALL BE CORED OR SLEEVED 3-1/2" FOR 3" DRAIN OUTLETS AT THE LOCATIONS DETERMINED BY CITY ENGINEER OR DEVELOPER, OR AS SPECIFIED ON PLAN. NOTCH CUTTING OF CURB IS PROHIBITED.

RESTRICTED WORK SCHEDULE:

NO CONCRETE FINISH WORK OR PERMANENT ASPHALT SHALL BE PLACED FROM NOVEMBER 15TH TO APRIL 15TH UNLESS WRITTEN APPROVAL IS GRANTED BY THE CITY ENGINEER.

ASPHALT/CONCRETE:

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER 48 HOURS IN ADVANCE OF BEGINNING WORK WHICH REQUIRES COMPACTION TESTING AND/OR PRE-POUR INSPECTION PRIOR TO PLACEMENT OF ASPHALT OR CONCRETE. WORK WILL NOT PROCEED UNTIL TESTING AND/OR INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE CITY ENGINEER.

CURB RAMPS:

CURB RAMPS AND TRUNCATED DOMES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CANTON CITY STANDARD DRAWING #46. CURB RAMPS WITH TRUNCATED DOMES SHALL BE INSTALLED AT EVERY EXISTING ROAD INTERSECTION.

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CURB RAMPS SHALL BE INSTALLED PRIOR TO RESURFACING.

THERE ARE AN ESTIMATED 105 LOCATIONS WITHIN THE PROJECT LIMITS REQUIRING CURB RAMPS WITH TRUNCATED DOMES TO BE INSTALLED.

PAYMENT:
ITEM 202 - WALK REMOVED (SQ. FT.), A QUANTITY OF 6300 SQ. FT. WILL BE CARRIED TO THE GENERAL SUMMARY.

ITEM 202 - CURB REMOVED (FT.), A QUANTITY OF 1050 FT. WILL BE CARRIED TO THE GENERAL SUMMARY.

ITEM 608 - CURB RAMP, AS PER PLAN (SQ. FT.) SHALL INCLUDE THE COST OF FINISHING AND INSTALLING ALL MATERIALS (EXCEPT TRUNCATED DOMES), GRADING, FORMING, CURB AND FINISHING OF THE CURB AND WALK. A QUANTITY OF 6300 SQ. FT. WILL BE CARRIED TO THE GENERAL SUMMARY.

ITEM 608 - TRUNCATED DOMES (EACH) SHALL INCLUDE THE COST OF FINISHING AND INSTALLING TRUNCATED DOMES INCLUDING ALL MATERIALS, FORMING, AND FINISHING. A QUANTITY OF 105 EACH WILL BE CARRIED TO THE GENERAL SUMMARY.

PROFILE AND ALIGNMENT:

PLACE THE PROPOSED PAVEMENT TO FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. PLAVE THE PROPOSED ASPHALT CONCRETE OVERLAY AS SHOWN ON THE TYPICAL SECTIONS.

ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN:

THIS ITEM OF WORK SHALL BE PERFORMED IN CONFORMANCE WITH ITEM 254 IN THE CMS EXCEPT THE DEPTH SHALL SHALL VARY; PLANING 2 ½" OR TO THE TOP OF EXISTING BRICK OR CONCRETE WHICHEVER IS FIRST. THIS WORK SHALL BE PERFORMED SO THAT THE BRICK OR CONCRETE BASE IS NOT DISTURBED. ALL EQUIPMENT, LABOR, TOOLS, AND OTHER INCIDENTALS REQUIRED TO PERFORM THIS WORK SHALL BE INLCUDED IN THE UNIT BID PRICE FOR EACH ITEM 254, PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN.

PARTIAL DEPTH PAVEMENT REPAIR:

A QUANTITY OF THIS ITEM SHALL BE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THE ITEM CONSIST OF REPAIRING EXISTING LOCATIONS EXHIBITING SURFACE DETERIORATION. REPAIR SHALL BE PERFORMED AS FOLLOWS:

REMOVE EXISTING ASPHALT BASE AND REPLACE WITH 3" OF ITEM 448 ASPHALT CONCRETE, TYPE 2. THE ASPHALT CONCRETE SHALL BE COMPACTED WITH A TYPE 1 PNEUMATIC TIRE ROLLER AND A STEEL WHEEL ROLLER AS PER 401.13.

IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THIS ITEM SHALL BE PERFORMED AFTER THE COMPLETION OF PAVEMENT PLANING. ALSO, THIS ITEM SHALL COMMENCE WITHIN 7 DAYS OF THE COMPLETION OF PAVEMENT PLANING. PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF SQUARE YARDS OF PAVEMENT REPAIR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 251, PARTIAL DEPTH PAVEMENT REPAIR	5179 SQ. YD.

PAVEMENT REPAIR:

A QUANTITY OF THIS ITEM SHALL BE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THE ITEM CONSIST OF CUTTING AND REMOVING DETERIORATED PAVEMENT FULL DEPTH AND REPLACING WITH NEW MATERIAL AS FOLLOWS:

COMPOSITE BRICK AND COMPOSITE CONCRETE PAVEMENT: REMOVE BRICK/CONCRETE AND BASE MATERIAL UP TO 12" AND REPLACE WITH LIKE DEPTH OF ITEM 304 AGGREGATE BASE AND 452 CONCRETE. CONCRETE DEPTH SHALL BE 6" MIN AND 9" MAX.

ASPHALT PAVEMENT: REMOVE EXISTING ASPHALT BASE UP TO 12" AND REPLACE WITH ITEM 201 ASPHALT CONCRETE BASE, PG64-22. THE MAXIMUM COMPACTED DEPTH OF ANY ONE LAYER SHALL BE 6 INCHES.

IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THIS ITEM SHALL BE PERFORMED AFTER THE COMPLETION OF PAVEMENT PLANING. ALSO, THIS ITEM SHALL COMMENCE WITHIN 7 DAYS OF THE COMPLETION OF PAVEMENT PLANING. PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF SQUARE YARDS OF PAVEMENT REMOVED AND REPLACED TO THE LIMITS DESIGNATED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 252, FULL DEPTH PAVEMENT SAWING	4238 FT.
ITEM 253, PAVEMENT REPAIR	942 SQ. YD.

ITEM 604 - ADJUSTMENT TO GRADE:

ALL 604 ADJUSTED TO GRADE ITEMS SHALL INCLUDE ALL NECESSARY MATERIALS AS PER THE CMS. THE CITY MAY PROVIDE CASTINGS. IF THE ENGINEER DETERMINES THAT A CASTING MUST BE REPLACED AND CASTING IS NOT PROVIDED BY THE CITY, PAYMENT FOR THE CASTING WILL BE MADE UNDER ITEM SPECIAL - MISCELLANEOUS METAL.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

604, CATCH BASIN ADJUSTED TO GRADE	30 EACH
604, MANHOLE ADJUSTED TO GRADE	140 EACH

ITEM 604 - RECONSTRUCT TO GRADE:

ALL 604 RECONSTRUCT TO GRADE ITEMS SHALL INCLUDE ALL NECESSARY MATERIALS AS PER THE CMS. THE CITY MAY PROVIDE CASTINGS. IF THE ENGINEER DETERMINES THAT A CASTING MUST BE REPLACED AND CASTING IS NOT PROVIDED BY THE CITY, PAYMENT FOR THE CASTING WILL BE MADE UNDER ITEM SPECIAL - MISCELLANEOUS METAL.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

604, CATCH BASIN RECONSTRUCTED TO GRADE	90 EACH
604, MANHOLE RECONSTRUCTED TO GRADE	20 EACH

ITEM 604 - SPECIAL - MISCELLANEOUS METAL:

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED TYPE, SIZE, AND STRENGTH (HEAVY OR LIGHT DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIAL SHALL MEET CITY STANDARDS AND ITEM 604 OF THE CMS AND SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

604, SPECIAL - MISCELLANEOUS METAL	2000 POUNDS

THE CONTRACTOR IS CAUTIONED TO USE EXTREME CARE IN THE REMOVAL, STORAGE AND REPLACEMENT OF ALL EXISTING CASTINGS. CASTINGS DAMAGED BY THE NEGLIGENCE OF THE CONTRACTOR, AS DETERMINED BY THE ENGINEER, SHALL BE REPLACED WITH THE PROPER NEW CASTING AT THE EXPENSE OF THE CONTRACTOR.

WALK AND CURB REPLACEMENT

IT MAY BE NECESSARY TO REPLACE WALK AND CURB ADJACENT TO RECONSTRUCTED CATCH BASINS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE IN SUCH SITUATIONS AS DIRECTED BY THE ENGINEER.

202, WALK REMOVED	500 S.F.
202, CURB REMOVED	500 FEET
608, 5" CONCRETE WALK	500 S.F.
609, CURB MISC.: CANTON CITY STANDARD	500 FEET

ITEM 609 - CURB MISC.: CANTON CITY STANDARD

THIS ITEM SHALL CONFORM TO CANTON CITY STANDARD DRAWINGS 42 AND 43. THE TYPE SHALL BE DETERMINED IN THE FIELD ANS SHALL MATCH ADJACENT CURB TYPE.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

GENERAL NOTES
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
DESCRIPTION	DATE	BY	

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: GENERAL NOTES 2

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A
SHEET 4 OF 22

ROADWAY / PAVEMENT / WALK / CURB (CONTINUED)

ITEM 203 – EXCAVATION:

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AND DISPOSING OF ALL UNSUITABLE MATERIAL BY EXCAVATING THE EXISTING SUBGRADE AND SUBBASE TO AN AVERAGE DEPTH OF 6" OR AS DIRECTED BY THE ENGINEER. EXACT LIMITS OF REMOVAL SHALL BE DETERMINED BY THE ENGINEER. ALL EQUIPMENT, LABOR, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203, EXCAVATION. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 203, EXCAVATION 157 CU. YD.

ITEM 304 – AGGREGATE BASE:

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PROVIDED AND SHALL BE USED AS DIRECTED BY THE ENGINEER TO BACKFILL AREAS WHICH WERE EXCAVATED UNDER ITEM 203 EXCAVATION. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 304, AGGREGATE BASE 157 CU. YD.

SANITARY SEWERS

ALL SANITARY SEWER CONDUITS AND APPURTENANCES SHALL BE CONSTRUCTED ACCORDING TO CITY SPECIFICATIONS, AS MODIFIED HEREIN; AND ODOT 603 SPECIFICATIONS EFFECTIVE AT THE TIME OF CONSTRUCTION.

ALL SANITARY WORK WITHIN AREAS WHERE THE PAVEMENT IS TO BE RESURFACED SHALL BE COMPLETED AND ACCEPTED BY THE CITY PRIOR TO RESURFACING SAME AREA.

IF A REQUIRED ITEM IS NOT IDENTIFIED AS A SPECIFIC PAY ITEM, ASSOCIATED COSTS OF SAID ITEM SHOULD BE INCLUDED IN THE COST OF OTHER ITEMS. NO OTHER PAYMENT WILL BE MADE, UNLESS WORK OUTSIDE OF THE SCOPE OR PLAN IS DIRECTED BY THE CITY ENGINEER AND/OR HIS REPRESENTATIVE.

BEDDING:

BEDDING SHALL BE AASHTO M 43, NUMBERS 56, 57, OR 67 LIMESTONE OR ANGULAR CRUSHED GRAVEL STONE. BEDDING SHALL EXTEND THE FULL WIDTH OF THE TRENCH. TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF PIPE PLUS 12" ON BOTH SIDES OF THE PIPE. FOR FLEXIBLE PIPE (PVC), BEDDING SHALL EXTEND 6" BELOW THE BOTTOM OF PIPE AND 12" ABOVE THE PIPE.

EMBEDMENT MATERIALS FOR BEDDING, HAUNCHING AND INITIAL BACKFILL, CLASS I, II, OR III, AS DESCRIBED IN ASTM D2321, SHALL BE USED AND CAREFULLY COMPACTED FOR ALL FLEXIBLE PIPE.

COSTS FOR BEDDING SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED SANITARY CONDUIT. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

EXTRA FOUNDATION MATERIAL:

WHEN IN THE OPINION OF THE ENGINEER, SOFT UNSTABLE MATERIALS ARE ENCOUNTERED WHICH ARE UNSUITABLE FOR THE BEDDING FOUNDATION, SAID MATERIALS SHALL BE REMOVED BY THE CONTRACTOR TO THE DEPTH DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE MATERIAL. IF SUITABLE REPLACEMENT MATERIAL IS NOT FOUND IN THE EXCAVATION, IT SHALL BE PAID FOR UNDER THIS SECTION.

EXTRA FOUNDATION MATERIAL SHALL CONSIST OF RUN-OF-MINE GRAVEL, GRAVEL, OR CRUSHED STONE TO THE SATISFACTION OF THE ENGINEER.

ROCK EXCAVATION FOR STRUCTURES, UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS, SHALL BE MEASURED BETWEEN VERTICAL PLANES ONE (1) FOOT BEYOND THE NEAT LINES OF THE FOUNDATION OF THE STRUCTURES ON ALL SIDES, AND PARALLEL THERETO, AND FROM THE SURFACE OF THE ROCK TO THE NEAT LINES OF THE BOTTOM OF THE STRUCTURES.

UNLESS IN THE CONTRACT DOCUMENTS, THE CITY WILL PAY FOR THIS WORK ACCORDING TO ODOT 109.05. PAYMENT FOR EXTRA FOUNDATION MATERIAL SHALL BE PER CUBIC YARD PLACED, AND SHALL INCLUDE ALL LABOR AND MATERIALS INCIDENTAL TO THE FURNISHING AND PLACING OF EXTRA FOUNDATION MATERIAL INCLUDING THE EXCAVATION OF THE MATERIAL TO BE REPLACED, SHEETING, BRACING, BYPASS PUMPING, TRENCH DEWATERING, DRAINING, REMOVAL OR SURPLUS MATERIALS AND GRADING OF THE EXTRA FOUNDATION MATERIAL.

ITEM 603 – 8" CONDUIT, TYPE B, AS PER PLAN:

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING 8" DIAMETER SEWER PIPE WITH NEW 8" DIAMETER SANITARY CONDUIT PER ODOT 603 – TYPE B, MEETING THE REQUIREMENTS OF ODOT 707.45 (ASTM D3034, SDR 35), EXCEPT AS MODIFIED, HEREIN.

PIPES SHALL BE CONNECTED WITH STAINLESS STEEL SHIELDED SEWER COUPLINGS. GASKETS SHALL MEET ASTM C1173-91, 300 SERIES STAINLESS STEEL SHEAR RING WITH A MINIMUM THICKNESS OF 0.012", 316 GRADE STAINLESS STEEL NUT AND BOLT TIGHTENING CLAMPS, SHEAR RING AND CLAMPS TO MEET ALL REQUIREMENTS OF ASTM A167-70. TRANSITIONAL SIZES SHALL UTILIZE A ONE PIECE GASKET. STAINLESS STEEL SEWER COUPLING SHALL BE MANUFACTURED BY FERNCO INC. RC SERIES, OR APPROVED EQUAL.

EXISTING PIPE BEING REMOVED AND REPLACED SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.

THE EXISTING MANHOLE SHALL BE REMOVED PER ODOT 202.11. THE MANHOLE CASTING AND COVER WILL BE RETAINED BY THE CITY OF CANTON.

DEBRIS ENCOUNTERED IN THE TRENCH SHALL ALSO BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY. THE CITY OF CANTON SHALL HAVE THE FIRST RIGHT OF REFUSAL FOR ANY ITEM ENCOUNTERED IN THE EXCAVATION.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 202, MANHOLE REMOVED, A.P.P. 1 EACH
ITEM 603, 8" CONDUIT, TYPE B, A.P.P. 50 FT

SANITARY LATERAL CONNECTIONS:

THE CONTRACTOR SHALL RECONNECT ALL SANITARY LATERAL CONNECTIONS WITHIN THE LIMITS OF THE PROPOSED SANITARY CONDUIT. ALL CONNECTIONS TO THE MAIN SEWER SHALL BE INSTALLED WITH A MANUFACTURED WYE.

THE MINIMUM SLOPE OF THE LATERALS SHALL BE 1/8" PER FT. (1%) AND THE MAXIMUM SHALL BE 1/4" PER FT. (2%) UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

WHEN THE DEPTH OF THE MAIN WOULD CAUSE A LATERAL TO EXCEED A 2% RATE OF GRADE, A LATERAL CONNECTION STACK SHALL BE INSTALLED AT THE MAIN. SAID STACK SHALL CONFORM TO CITY STANDARD DRAWING NO. 28.

BACKFILL:

BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH ODOT 703.11, TYPE '1' GRANULAR MATERIAL (304, 411, or 617 AGGREGATE GRADATION). DEVIATIONS FROM THIS ARE AS FOLLOWS:

1. NO FOUNDRY SAND, AIR COOLED BLAST FURNACE SLAG, GRANULATED SLAG, OR OPEN HEARTH SLAG SHALL BE PERMITTED.

THE CITY RESERVES THE RIGHT TO REFUSE ANY ALTERNATE BACKFILL MATERIAL THE CITY FINDS NOT CONSISTENT WITH THE MATERIAL PREVIOUSLY APPROVED BY THE CITY ENGINEER.

BACKFILL METHODS SHALL BE IN ACCORDANCE WITH ODOT 603; DEVIATION FROM THIS ARE AS FOLLOWS:

1. CONTRACTOR MAY REQUEST TO EXCEED 8" PLACEMENT LIFTS DURING BACKFILL PROCEDURE. GREATER LIFT SIZE IS SUBJECT TO THE CITY ENGINEER'S APPROVAL BASED ON THE CONTRACTOR'S PROPOSED COMPACTION METHOD AND THE BACKFILL MATERIAL.

COSTS FOR BACKFILL SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED SANITARY CONDUIT. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

PAVEMENT REPLACEMENT:

PAVEMENTS WITHIN THE LIMITS OF THE SANITARY SEWER WORK ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CANTON CITY STANDARD DRAWING #44.

COSTS FOR PAVEMENT REPLACEMENT SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED SANITARY CONDUIT. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

RESTORATION OF DISTURBED AREAS:

CONTRACTOR SHALL REPLACE GRASSY AREAS, DRIVE APPROACHES, PARKING AREAS, CURB AND SIDEWALK TO A CONDITION SIMILAR TO, OR BETTER THAN, THE CONDITION AT THE START OF THE PROJECT. SHAPE AND FINISH TO MATCH EXISTING. ALL CITY OF CANTON AND ODOT APPLICATIONS SHALL APPLY. COSTS FOR RESTORATION OF DISTURBED AREAS, INCLUDING A MINIMUM OF 3" TOPSOIL, SEED AND MULCH, SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED SANITARY CONDUIT. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

ITEM 604 – MANHOLE NO. 3, AS PER PLAN:

PRECAST CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ODOT 604 AND ODOT STANDARD CONSTRUCTION DRAWING MH-1.2 (NOTE: THIS INCLUDES ALL REQUIREMENTS OF ASTM C-478, PER ODOT 706.13). DEVIATIONS FROM THIS ARE AS FOLLOWS:

1. ALL MANHOLE SECTIONS SHALL HAVE 6 ±2 PERCENT AIR IN THE HARDENED CONCRETE.

2. PRECAST BASE SHALL HAVE EXTENDED BASE OF 6" AROUND OUTSIDE CIRCUMFERENCE OF MANHOLE.

3. GRADE RINGS SHALL BE SET IN MORTAR AND SHALL NOT EXCEED 12".

4. GRADE RINGS, IF BRICK, SHALL BE BELDEN BRICK CO. (FINE GRIND) OR EQUAL AND MEET ASTM C32-90.

5. MORTAR TO BE AIR ENTRAINED, HIGH STRENGTH QUALITY UNLESS OTHERWISE SPECIFIED.

6. UNIONS IN RISER SECTIONS SHALL USE RUBBER GASKETS PER ASTM C-443.

7. MANHOLES SHALL HAVE ECCENTRIC CONE TOP, UNLESS OTHERWISE PERMITTED BY ENGINEER.

MANHOLE BASE SHALL BE PLACED ON A MINIMUM OF 6" OF #57 STONE BEDDING.

ALL EXCAVATED AREAS SHALL BE BACKFILLED WITH ODOT 703.11, TYPE '1' GRANULAR MATERIAL. BACKFILL METHODS IN ACCORDANCE WITH ODOT 603.081.

CASTINGS AS PER CITY STANDARD DRAWING NO. 19.

DISTANCE BETWEEN TOP OF MANHOLE CASTING AND THE TOP STEP SHALL NOT EXCEED 30".

MANHOLE STEPS SHALL BE POLYPROPYLENE IN ACCORDANCE WITH ASTM 2146-68.

CHANNELS SHALL BE CONSTRUCTED WITH CLASS 'C' CONCRETE WITH A FINISHED SMOOTH SURFACE MAINTAINING POSITIVE FLOW FROM INLET TO OUTLET.

WHEN SPECIFIED ON THE PLANS, DROP PIPES SHALL BE CONSTRUCTED FOR SANITARY CONDUITS WHICH CANNOT BE CONNECTED TO THE MANHOLE WITHIN 24 INCHES FLOW LINE TO FLOW LINE. DROP PIPES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CITY STANDARD DRAWING NO. 18 OR AS SHOWN ON THE PLANS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 604, MANHOLE, NO. 3, A.P.P. 1 EACH

TESTING:

SANITARY SEWERS SHALL BE TESTED BY CONTRACTOR IN ACCORDANCE WITH THE CITY OF CANTON'S SUPPLEMENTAL SPECIFICATION:

02-00 TESTING FOR EXCESSIVE DEFLECTION FOR NON-PRESSURE THERMOPLASTIC SEWER PIPE.

NOTE: THIS SPECIFICATION REQUIRES THAT THE DEFLECTION RATE SHALL NOT EXCEED FIVE PERCENT (5%) AND SHALL BE TESTED IN ACCORDANCE WITH ASTM D-3034.

04-01 STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE TEST.

NOTE: THIS SPECIFICATION REQUIRES THAT THE MANHOLES BE TESTED IN ACCORDANCE WITH ASTM C-1244.

SANITARY SEWERS CONSTRUCTED WITH THIS PROJECT SHALL BE INTERNALLY TELEVISED BY THE CONTRACTOR, **A MINIMUM OF 30 DAYS FOLLOWING INSTALLATION OF THE SANITARY SEWER,** IN ACCORDANCE WITH CITY OF CANTON'S SUPPLEMENTAL SPECIFICATION:

05-01 CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION AND DOCUMENTATION PROCEDURE.

PROHIBITED CONNECTIONS:

ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

REGULATORY REQUIREMENTS:

INSTALL SANITARY PIPE AT A MINIMUM OF 10 FOOT HORIZONTAL DISTANCE FROM WATER MANS, AND LAY PIPES AT A MINIMUM 18 INCHES VERTICAL DISTANCE FROM WATER MAINS AT THEIR CROSSING, BOTH AS MEASURED BETWEEN THE OUTSIDE OF THE PIPE WALLS. AT CROSSINGS, INSTALL ONE FULL LENGTH OF PIPE SO BOTH JOINTS WILL BE AS FAR FROM THE MAIN AS POSSIBLE.

STARK COUNTY SANITARY SEWERS:

STARK COUNTY OWNS AND OPERATES AN EXISTING 8" DIAMETER SANITARY SEWER ON THE WEST SIDE OF CLEVELAND AVENUE NW IN THE VICINITY OF THE PROPOSED 78" DIAMETER STORM SEWER REPLACEMENT. IT IS NOT THE INTENT OF THIS PROJECT TO ENCROACH UPON THIS SEWER.

IN THE EVENT THAT WORK IS NECESSARY TO REPAIR AND OR REPLACE ANY PORTION OF STARK COUNTY'S SEWER, ALL STARK COUNTY METROPOLITAN SEWER DISTRICT SPECIFICATIONS SHALL APPLY.

BYPASS PUMPING:

THE BYPASS PUMPING SYSTEM SHALL, AT A MINIMUM, MEET THE FOLLOWING REQUIREMENTS:

1. THE SYSTEM SHALL BE FULLY AUTOMATIC WITH SELF-PRIMING PUMPS THAT DO NOT REQUIRE USE OF FOOT VALVES, VACUUM PUMPS OR DIAPHRAGM PUMPS IN THE PRIMING SYSTEM. PUMPS SHALL BE ELECTRIC WITH STAND-ALONE OR DIESEL POWER, EACH WITH "RESIDENTIAL MUFFLERS" INSTALLED FOR NOISE ABATEMENT.
2. DUPLICATE PUMPS SHALL BE PROVIDED TO ENSURE EMERGENCY BACK-UP CAPABILITIES IN THE EVENT OF PRIMARY PUMP FAILURE.
3. PUMPS SHALL BE EQUIPPED WITH AUTOMATIC START/STOP CONTROLS WITH MANUAL BACK-UP CONTROL CAPABILITIES.
4. THE PUMPS AND/OR SYSTEM SHALL BE CAPABLE/ CONFIGURED TO ALLOW DRY RUNNING FOR LONG PERIODS OF TIME TO ACCOMMODATE THE CYCLICAL NATURE OF WASTEWATER FLOWS.
5. ALL DISCHARGE PIPING SHALL BE CONSTRUCTED OF RIGID PIPE WITH POSITIVE, LEAK PROOF, BALL AND SOCKET CONNECTIONS PROVIDING DEFLECTION UP TO 20%. HEAT FUSED HDPE AND LAY FLAT PIPING SYSTEMS WILL ALSO BE ALLOWED. UNDER NO CIRCUMSTANCES WILL ALUMINUM "IRRIGATION" TYPE PIPING OR SOLVENT WELDED PVC PIPE BE ALLOWED.

CONTRACTOR SHALL PROVIDE ALL NECESSARY PLUGS AND MAINTAIN PUMPS IN GOOD/OPERABLE CONDITION AT ALL TIMES.

ALL COSTS FOR BYPASS PUMPING SHALL BE SUBSIDIARY TO THE PIPE RECONSTRUCTION ITEM.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUITY OF SANITARY SEWER SERVICE TO EACH FACILITY CONNECTED TO THE SECTION OF SEWER DURING THE EXECUTION OF THE WORK.

IF SEWAGE AND/OR WATER BACKUP OCCURS AND ENTERS BUILDINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP, REPAIR, PROPERTY DAMAGE COST AND LEGAL CLAIMS.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3351

GENERAL NOTES
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
DESCRIPTION	DATE	BY	

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: GENERAL NOTES 3

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A
SHEET 5 OF 22

STORM SEWERS

ALL STORM SEWER CONDUITS AND APPURTENANCES SHALL BE CONSTRUCTED ACCORDING TO CITY SPECIFICATIONS AND ODOT 603 SPECIFICATIONS EFFECTIVE AT THE TIME OF CONSTRUCTION.

BEDDING:

BEDDING SHALL BE AASHTO M 43, NUMBERS 56, 57, OR 67 LIMESTONE OR ANGULAR CRUSHED GRAVEL STONE. BEDDING SHALL EXTEND THE FULL WIDTH OF THE TRENCH. TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF PIPE PLUS 12" ON BOTH SIDES OF THE PIPE. FOR REINFORCED CONCRETE PIPE CONDUIT THE BEDDING SHALL EXTEND 3" BELOW THE BOTTOM OF PIPE AND FLUSH WITH THE TOP OF PIPE.

BEDDING CLASSES A, B, C,, OR CRUSHED GRAVEL STONE AS DESCRIBED IN ASTM C12 SHALL BE USED AND CAREFULLY COMPACTED FOR ALL RIGID PIPE.

BACKFILL WITHIN THE RIGHT-OF-WAY:

BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH ODOT 703.11, TYPE '1' GRANULAR MATERIAL (304, 411, or 617 AGGREGATE GRADATION). DEVIATIONS FROM THIS ARE AS FOLLOWS:

1. NO FOUNDRY SAND, AIR COOLED BLAST FURNACE SLAG, GRANULATED SLAG, OR OPEN HEARTH SLAG SHALL BE PERMITTED.

BACKFILL METHODS SHALL BE IN ACCORDANCE WITH ODOT 603; DEVIATION FROM THIS ARE AS FOLLOWS:

1. CONTRACTOR MAY REQUEST TO EXCEED 8" PLACEMENT LIFTS DURING BACKFILL PROCEDURE. GREATER LIFT SIZE IS SUBJECT TO THE CITY ENGINEER'S APPROVAL BASED ON THE CONTRACTOR'S PROPOSED COMPACTION METHOD AND THE BACKFILL MATERIAL.

BACKFILL OUTSIDE THE RIGHT-OF-WAY:

BACKFILL MATERIAL AND COMPACTION SHALL BE IN ACCORDANCE WITH ODOT 603.

78" CONDUIT, TYPE B, AS PER PLAN:

PIPE SHALL BE CLASS IV IN ACCORDANCE WITH ODOT 706.02 AND SHALL BE INSTALLED IN ACCORDANCE WITH ODOT 603.

ANY NECESSARY BYPASS PUMPING AND/OR FLUMING THROUGH THE TRENCH SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COSTS FOR PUMPING AND/OR FLUMING SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED STORM PIPE. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

REMOVE 60 L.F. OF EXISTING 78" DIAMETER CORRUGATED METAL PIPE (CMP) PER ODOT 202.04. COSTS FOR 78" DIAMETER CMP REMOVAL SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED STORM PIPE. NO SEPARATE PAY ITEM IS INCLUDED FOR THIS WORK.

MASONRY COLLARS SHALL BE USED TO JOIN PROPOSED PIPE TO EXISTING PIPE IN ACCORDANCE WITH ODOT STANDARD DRAWING DM-1.1. THE COST SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED 78" DIAMETER RCP.

THERE IS APPROXIMATELY 8"± OF EXISTING ASPHALT SURFACE AND 8" OF CONCRETE BASE OVER THE EXISTING 78" CMP TRENCH. COSTS TO REMOVE SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED 78" RCP. THE PAVEMENT ABOVE THE TRENCH SHALL BE RESTORED AS PER CANTON CITY STANDARD DRAWING #44.

ANY EXISTING DRIVES, BERMS, LAWNS, PAVEMENTS, CURBS, MAILBOXES, PIPES, UTILITIES, OR OTHER APPURTENANCES DISTURBED DURING THE REPLACEMENT OF THE 78" DIAMETER STORM PIPE BUT NOT SPECIFICALLY DESIGNATED FOR REMOVAL/ RELOCATION/ REPLACEMENT WITHIN THE EXCAVATION LIMITS OF THE 78" DIAMETER STORM PIPE REPLACEMENT (AS SHOWN ON SHEET _ OF _) SHALL BE, AS DIRECTED BY THE CITY ENGINEER OR OWNER, PROTECTED OR RESTORED TO THE COMPLETE SATISFACTION OF THE CITY ENGINEER OR OWNER. RESTORATION OF THE EXISTING ROADWAY SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY. COSTS FOR ALL SUCH PROTECTION AND RESTORATION SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PROPOSED 78" RCP, UNLESS OTHERWISE NOTED.

THERE IS EXISTING SHEETING AND TIMBERING LEFT-IN-PLACE FROM THE ORIGINAL STORM SEWER CONSTRUCTION. IF THIS SHEETING AND TIMBERING IS ENCOUNTERED DURING EXCAVATION, IT SHALL BE REMOVED BY THE CONTRACTOR. THE COST SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE 78" RCP.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 603, 78" CONDUIT, TYPE B, A.P.P. 60 FT

TESTING:

STORM SEWERS CONSTRUCTED WITH THIS PROJECT SHALL BE TELEVISED BY THE CONTRACTOR IN ACCORDANCE WITH CITY OF CANTON'S SUPPLEMENTAL SPECIFICATION:

05-01 CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION AND DOCUMENTATION PROCEDURE.

TRAFFIC:

EXISTING STREET NAME AND TRAFFIC CONTROL SIGNS:

WHERE WORK REQUIRES THE MOVEMENT OF EXISTING SIGNS (STOP SIGNS, SPEED LIMIT SIGNS, NO PARKING SIGNS, ETC.). THE CONTRACTOR IS REQUIRED TO MAINTAIN THE FUNCTION OF ALL TRAFFIC CONTROL SIGNS. ALL SIGNS REMOVED BY THE CONTRACTOR SHALL BE STORED ON SITE AND REINSTALLED BY THE CONTRACTOR.

EXISTING DETECTOR LOOPS:

THE CITY TRAFFIC SIGNAL DIVISION WILL CHECK THE OPERATION OF ALL EXISTING LOOP DETECTORS FOLLOWING THE PLACEMENT OF THE INTERMEDIATE ASPHALT COURSE. LOOP DETECTORS FOUND NOT TO BE WORKING WILL BE ABANDONED IN PLACE.

ITEM 632 - DETECTOR LOOP, AS PER PLAN:

LOOP DETECTORS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER. A REPRESENTATIVE OF THE CITY TRAFFIC ENGINEERING DIVISION WILL MEET WITH THE CONTRACTOR AT EACH LOCATION TO DETERMINE THE PLACEMENT OF EACH LOOP DETECTOR. COORDINATION SHALL BE DISCUSSED AT THE PRECONSTRUCTION MEETING.

THE LOOP DETECTOR WIRE SHALL BE CUT INTO THE PAVEMENT AFTER THE PLACEMENT OF THE INTERMEDIATE ASPHALT COURSE AND BEOFRE THE PLACEMENT OF THE SURFACE COURSE. (NOTE: WIRE MAY BE PLACED IN THE SURFACE COURSE WITHIN THE PROJECT LIMITS CONTROLLED BY THE INTERIM COMPLETION DATE.) THE SLOT SHALL BE CUT 4 INCHES DEEP FROM THE TOP OF THE INTERMEDIATE COURSE. THE NEW LOOP DETECTOR WIRES SHALL BE RUN TO THE EXISTING PULLBOXES WHICH CONTAINS THE PROPER LEAD-IN CABLES. THE NEW LOOP DETECTOR WIRES SHALL BE SPLICED WITH THE EXISTING LEAD-IN CABLES USING THE POURED EPOXY TYPE CABLE SPLICE KIT (CONFORMING TO 725.15E). THE COST OF THE SPLICE KITS IS INCLUDED IN THIS ITEM.

APPROXIMATELY 18 6'X30' AND 12 6'X6' DETECTOR LOOPS WILL BE INSTALLED. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 632 - DETECTOR LOOP, AS PER PLAN 30 EACH

ALL NECESSARY MATERIAL, LABOR, SPLICE KITS AND EQUIPMENT SHALL BE INCIDENTAL TO PAYMENT OF THESE ITEMS.

POST CONSTRUCTION INCIDENTALS

RELEASE OF RETAINER/BONDS:

PRIOR TO THE RELEASE OF RETAINER/CONSTRUCTION BOND BY THE CITY OF CANTON, THE CONTRACTOR SHALL HAVE COMPLETED THE ENGINEER'S PROJECT PUNCHLIST AND SUBMIT. FINAL WAIVER OF LIEN, IN ACCORDANCE WITH CITY SS 01-00.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

GENERAL NOTES
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
	DESCRIPTION	DATE	BY

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A
SHEET 6 OF 22

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: GENERAL NOTES 4

MAINTAINING TRAFFIC:

THE CONTRACTOR SHALL MAINTAIN TRAFFIC ADJACENT TO AND THROUGH THE PROJECT AS DESCRIBED BELOW AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE OHIO DEPARTMENT OF TRANSPORTATION MANUAL OF CONSTRUCTION AND MATERIALS SPECIFICATIONS ITEM 614 MAINTAINING TRAFFIC. THE CONTRACTOR SHALL FURNISH, MAINTAIN, AND REMOVE ALL SIGNS, FLAGS, FLAGMEN, WATCHMEN, BARRICADES, SIGN SUPPORTS, CONES, BARRELS, AND INCIDENTALS IN CONFORMANCE WITH THE MOST RECENT REVISIONS OF THE CURRENT EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE FOLLOWING:

SEWER REPLACEMENT

SEWER REPLACEMENT SHALL BE PERFORMED IN THREE PHASES. PHASE 1 SHALL CONSIST OF THE REPLACEMENT OF THE 78" STORM SEWER PINE ACROSS CLEVELAND AVE., PHASE 2 SHALL CONSIST OF THE REPLACEMENT OF THE 8" SANITARY SEWER PIPE ACROSS 47TH ST. AND REMOVAL OF EXISTING MANHOLE, AND PHASE 3 SHALL CONSIST OF THE INSTALLATION OF THE PROPOSED SANITARY MANHOLE SOUTH OF 47TH ST. THE CONTRACTOR MAY PERFORM THE PHASES IN ANY ORDER; HOWEVER PHASES 1 AND 2 SHALL NOT BE PERFORMED CONCURRENTLY.

PHASE 1

1. CLEVELAND AVE. SHALL BE CLOSED TO ALL TRAFFIC FOR A PERIOD NOT TO EXCEED 7 CALENDAR DAYS.

2. ACCESS TO 47TH ST. SHALL BE MAINTAINED FOR THE DURATION OF THE CLEVELAND AVE. CLOSURE.

3. DETOUR SIGNS SHALL BE POSTED AS PER DETOUR PLAN. PAYMENT SHALL BE MADE UNDER ITEM 614 – DETOUR SIGNING.

4. THREE (3) PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED AS PER THE DETOUR PLAN. PCMS SHALL BE PLACED ONE WEEK PRIOR TO THE CLOSURE OF CLEVELAND AVE. TO INDICATE THE START DATE FOR THE CLOSURE AND REMAIN FOR THE DURATION OF THE CLOSURE. THE MESSAGES TO BE DISPLAYED ON EACH PCMS WILL BE PROVIDED BY THE ENGINEER AT THE PRECONSTRUCTION MEETING. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 614 – PORTABLE CHANGEABLE MESSAGE SIGN 1.5 SIGN MONTHS

PHASE 2

1. 47TH ST. SHALL BE CLOSED TO ALL TRAFFIC FOR A PERIOD NOT TO EXCEED 5 CALENDAR DAYS.

2. ACCESS ON CLEVELAND AVE. SHALL BE MAINTAINED FOR THE DURATION OF THE 47TH ST. CLOSURE.

3. THE CONTRACTOR MAY CLOSE THE NORTHBOUND CURB LANE OF CLEVELAND AVE. DURING OFF–PEAK PERIODS (I.E. ANY PERIOD OTHER THAN 6–8AM AND 3–6PM) OR AS APPROVED BY ENGINEER.

4. DETOUR SIGNS SHALL BE POSTED AS PER DETOUR PLAN. PAYMENT SHALL BE MADE UNDER ITEM 614 – DETOUR SIGNING.

PHASE 3

1. THE CONTRACTOR MAY CLOSE THE NORTHBOUND CURB LANE OF CLEVELAND AVE. DURING OFF–PEAK PERIODS (I.E. ANY PERIOD OTHER THAN 6–8AM AND 3–6PM) OR AS APPROVED BY ENGINEER.

PAVING OPERATIONS

1. A MINIMUM OF ONE TEN FOOT LANE IN EACH DIRECTION SHALL BE MAINTAINED ON CLEVELAND AVE. ON THE EXISTING PAVEMENT OR COMPLETED PAVEMENT DURING CONSTRUCTION OF THE WORK. CLEVELAND AVE. MAY BE REDUCED TO ONE LANE WITH A FLAGGER DURING REPLACEMENT OF THE 72" STORM SEWER PIPE.

2. CONES SHALL NOT BE ACCEPTABLE TRAFFIC CONTROL DEVICES FOR LANE RESTRICTIONS OR LANE REDUCTIONS THAT ARE IN OPERATION ONE–HALF HOUR AFTER SUNSET OR ONE–HALF HOUR BEFORE SUNRISE. ALL NIGHTTIME LANE RESTRICTIONS SHALL REQUIRE DRUMS OR BARRICADES AT A MINIMUM SPACING OF FIFTY (50) FEET.

3. LANE RESTRICTIONS OR LANE REDUCTIONS SHALL NOT BE PERMITTED AFTER NORMAL WORKING HOURS. NORMAL WORKING HOURS SHALL BE THSE HOURS DURING WHICH THE CONTRACTOR HAS A FULL COMPLEMENT OF EMPLOYEES AND EQUIPMENT ACTIVELY REMOVING AND/OR PLACING MATERIALS.

4. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, AND SUBSEQUENTLY REMOVE ALL FLAGS, BARRICADES, SIGNS, AND SIGN SUPPORTS AND FURNISH AND MAINTAIN ALL FLAGGERS, WATCHERS AND INCIDENTALS RELATED THERETO.

5. ALL FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT OPERATIONS SHALL BE COMPLETED THE SAME DAY THE EXCAVATION IS MADE. IF THE CONTRACTOR CANNOT COMPLETE THE WORK, THE EXCAVATION SHALL BE BACKFILLED.

6. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE PERMITTED TO HAVE SUCCESSIVE WORK ZONES UNLESS THE DISTANCE BETWEEN THE DRUMS, BARRICADES OR CONES EXCEEDS ONE (1) MILE.

7. ONLY DURING OFF–PEAK PERIODS (I.E. ANY PERIOD OTHER THAN 6–8AM AND 3–6PM) SHALL THE CONTRACTOR INSTALL AND SUBSEQUENTLY RESET ALL TRAFFIC CONTROL NECESSARY FOR THE WORK ZONE FOR EACH CONSTRUCTION PHASE.

8. IN ADDITION TO THE REQUIREMENTS OF 614 WORK ZONE PAVEMENT MARKINGS (<614.11>), AT THE END OF EACH DAY OF WORK, THE CONTRACTOR SHALL REPLACE (WITH WORK ZONE MARKINGS) ALL LANE, CENTER, STOP OR CHANNELIZING LANES THAT WERE REMOVED OR COVERED DURING THE PAVEMENT REMOVAL OR PAVEMENT PLACING OPERATIONS. QUANTITIES FOR SUCH PLACEMENT ARE CARRIED AS PART OF THE ITEMS LISTED UNDER 614 WORK ZONE PAVEMENT MARKINGS.

9. A QUANTITY OF 15 CU. YD. OF 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC SHALL BE PROVIDED FOR USE IN MAINTAINING PAVEMENT, SHOULDERS, AND OTHER LOCATIONS PRIOR TO RESURFACING, AS DIRECTED BY THE ENGINEER.

10. PRIOR TO OPENING TO TRAFFIC EACH LANE SHALL BE IN A SAFE, PASSABLE CONDITION. ALL TRANSVERSE JOINTS SHALL EXTEND ACROSS THE FULL LANE WIDTH AND EACH LANE SHALL BE FREE FROM UNEVEN LONGITUDINAL JOINTS. THE CONTRACTOR SHALL PROVIDE ASPHALT WEDGES FOR TRANSVERSE JOINTS WHEREVER THERE ARE PAVEMENT ELEVATION DIFFERENCES.

11. ACCESS SHALL BE MAINTAINED AT ALL TIMES FOR EMERGENCY AND FIRE DEPARTMENT VEHICLES.

12. THE CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL RESIDENCES AND BUSINESSES DURING CONSTRUCTION. IN THE EVENT A DRIVE ACCESS NEEDS TO BE CLOSED, THE CONTRACTOR SHALL GIVE NOTICE OF CLOSURE AND DURATION TO THE PROPERTY OWNER 24 HOURS IN ADVANCE. CONTRACTOR SHALL ARRANGE FOR ALTERNATE PARKING AND REASONABLE ACCESS FOR THOSE PROPERTY OWNERS AFFECTED BY DRIVE CLOSURES.

13. A QUANTITY OF ITEM 614 WORK ZONE MARKING SIGN HAS BEEN INCLUDED IN THE PLAN. THE QUANTITY SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING SIGNS: W8–1 [BUMP], W8–11 [UNEVEN LANES SYMBOL]. THESE QUANTITIES SHALL BE AS PER <614.04>.

THE FOLLOWING QUANTITIES SHALL BE USED FOR THE MAINTENANCE OF TRAFFIC ON THIS PROJECT:

PHASE 1 – PLANED SURFACE
- 614, WORK ZONE CENTER LINE, CLASS II, 3.36 MILE
- 614, WORK ZONE LANE LINE, CLASS II, 6.48 MILE
- 614, WORK ZONE CHANNELIZING LINE, CLASS I, 2048 FT.
- 614, WORK ZONE STOP LINE, CLASS I, 739 FT.
- 614, WORK ZONE MARKING SIGN (ALL PHASES), 16 EACH

PHASE 2 – INTERMEDIATE COURSE
- 614, WORK ZONE CENTER LINE, CLASS II, 3.36 MILE
- 614, WORK ZONE LANE LINE, CLASS II, 6.48 MILE
- 614, WORK ZONE CHANNELIZING LINE, CLASS I, 2048 FT.
- 614, WORK ZONE STOP LINE, CLASS I, 739 FT.

PHASE 3 – SURFACE COURSE
- 614, WORK ZONE CENTER LINE, CLASS II, 3.36 MILE
- 614, WORK ZONE LANE LINE, CLASS II, 6.48 MILE
- 614, WORK ZONE CHANNELIZING LINE, CLASS I, 2048 FT.
- 614, WORK ZONE STOP LINE, CLASS I, 739 FT.

PORTABLE CONCRETE BARRIER

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM 622, PORTABLE CONCRETE BARRIER, 32" 200 FT.

TRAFFIC CONTROL INSPECTOR:

THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL OTHER THAN THE SUPERINTENDENT AND SUBJECT TO THE APPROVAL OF THE ENGINEER, TO CONTINUOUSLY INSPECT ALL TRAFFIC CONTROL DEVICES WHENEVER CONSTRUCTION WORK IS BEING PERFORMED WITHIN THE WORK LIMITS OF THE PROJECT. THE DESIGNATED INDIVIDUAL SHALL ALSO INSPECT ALL TRAFFIC DEVICES AT THE BEGINNING AND AT THE END OF EACH WORK DAY. THE DESIGNATED INDIVIDUAL OR QUALIFIED REPRESENTATIVE SHALL ALSO BE AVAILABLE ON AN AROUND THE CLOCK BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. THESE INDIVIDUALS SHALL BE EQUIPPED WITH CELLULAR PHONES AND THEIR NAMES AND PHONE NUMBERS SHALL BE GIVEN TO THE PROJECT ENGINEER AT THE PRE–CONSTRUCTION MEETING. THE DESIGNATED INDIVIDUAL MAY HAVE OTHER CONSTRUCTION RELATED DUTIES AS LONG AS IMMEDIATE ATTENTION IS GIVEN TO TRAFFIC CONTROL. PAYMENT FOR THE SERVICES OF THE TRAFFIC CONTROL INSPECTOR SHALL BE INCLUDED IN THE LUNP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

ITEM 614 – LAW ENFORCEMENT OFFICER WITH PARTOL CAR:

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE OMUTCD, A UNIFORMED LAW ENFORCEMENT OFFICER (LEO) WITH AN OFFICIAL PATROL CAR (CAR WITH TOP–MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR CONTROLLING TRAFFIC AS DIRECTED BY THE ENGINEER FOR THE FOLLOWING TASKS:

1. FOR LANE CLOSURES: DURING INITIAL SET–UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED.

LAW ENFORCEMENT OFFICERS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICAL PARTOL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

CITY OF CANTON POLICE DEPARTMENT
221 THIRD STREET S.W.
CANTON, OHIO 44702
330–489–3111

LAW ENFORCEMENT OFFICERS WITH PATROL CAR REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:
ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR 450 HOURS

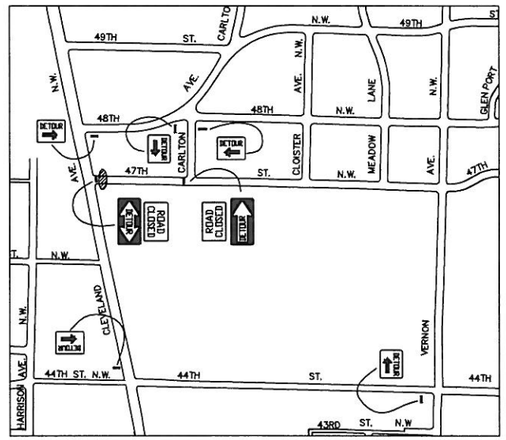
THE HOURS PAID SHALL INCLUDE MINIMUM SHOW–UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

IF THE CONTRACTOR WISHES TO UTILIZE LEO'S FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, HE MAY DO SO AT HIS OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.

CONTRACTOR'S EQUIPMENT – OPERATION AND STORAGE:

A QUALIFIED FLAGGER SHALL BE EMPLOYED WHERE THE CONTRACTOR'S EQUIPMENT MUST MERGE WITH THE TRAFFIC STREAM. THE CONTRACTOR'S EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT. PAVERS, ROLLERS AND OTHER EQUIPMENT MAY NOT BE PARKED ON CLEVELAND AVENUE, BUT MAY BE PARKED ON SIDE STREETS, WITH THE ENGINEER'S APPROVAL, WHEN PAVING OPERATIONS ARE SCHEDULED TO CONTINUE WITHIN THE NEXT WORKDAY. OTHERWISE THE EQUIPMENT SHALL BE STORED AT A STORAGE AREA OUTSIDE THE R/W, THE LOCATION OF WHICH SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. WHEN PARKING ALONG A SIDE STREET, ADEQUATE BARRICADES AND LIGHTS SHALL BE PLACED ON THE PAVEMENT SIDE OF THE EQUIPMENT TO IDENTIFY THE LIMITS OF THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORAGE AT THE APPROVED CONTRACTOR'S STORAGE AREA. NO EQUIPMENT SHALL BE PARKED ON PRIVATE PROPERTY UNLESS PRIOR APPROVAL OF THE OWNER AND THE PROJECT ENGINEER HAS BEEN GRANTED.

SEWER WORK – PHASE 2
47TH ST. DETOUR

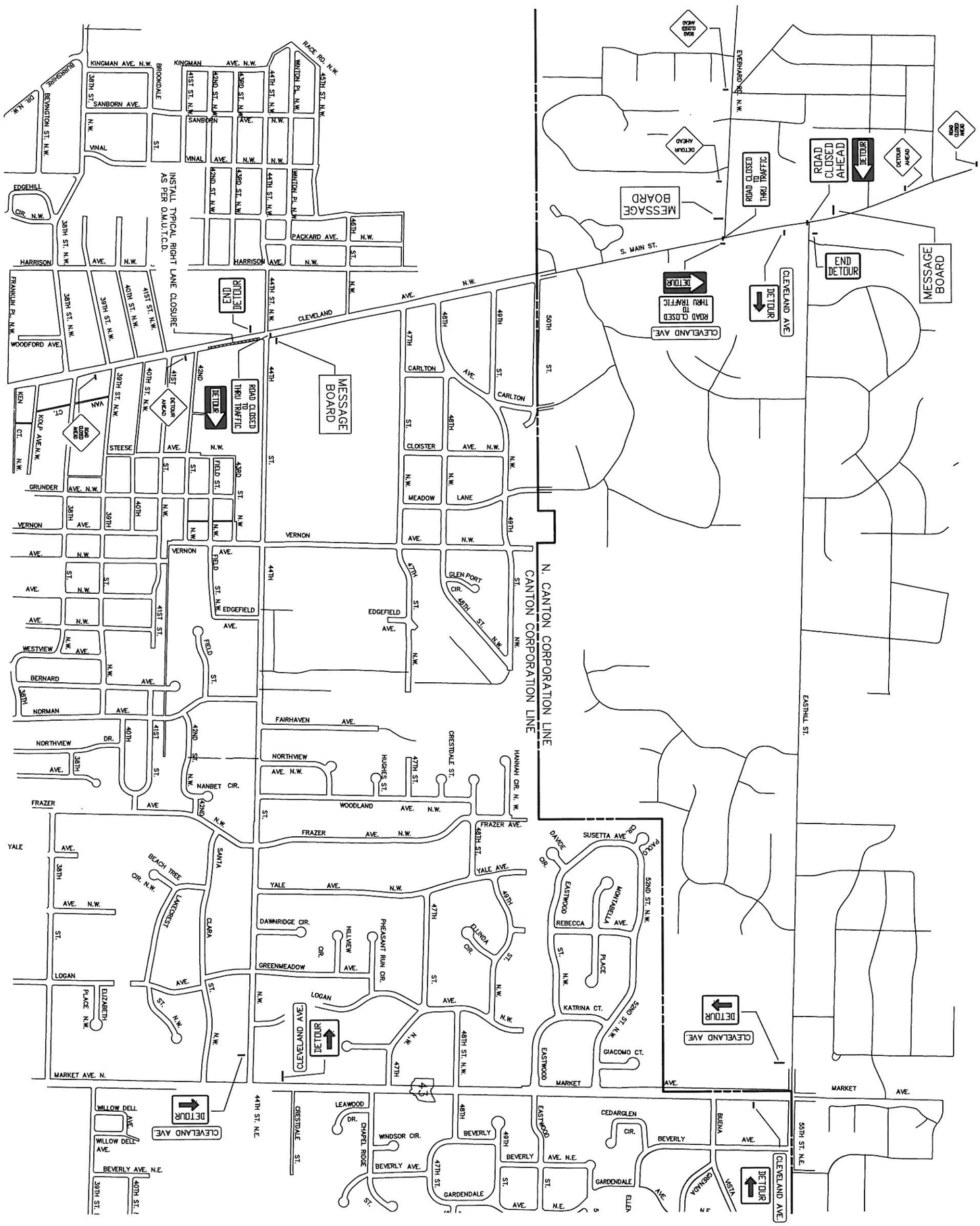


OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489–3381

MAINTENANCE OF TRAFFIC
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
DESCRIPTION	DATE	BY	

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A
SHEET 7 OF 22
DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: MOT 1



DATE: 8/4/09	DRAWN BY: EGM	REVISIONS			MAINTENANCE OF TRAFFIC CLEVELAND AVE. NW PAVING PROJECT	OFFICE OF THE CITY ENGINEER CANTON, OHIO DANIEL J. MOEGLIN, P.E., CITY ENGINEER 2436 30th STREET N.E. 44705 (330)489-3381
H. SCALE: N/A	APPROVED BY:	DESCRIPTION	DATE	BY		
V. SCALE: N/A	FIELD BOOK:					
SHEET 8 OF 22	FILE NAME: MOT 2					

4	5	6	7	9	13	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION
										ROADWAY
6800						202	30000	6800	SF	WALK REMOVED
1550						202	32000	1550	FT	CURB REMOVED
	157					203	30000	157	CY	EXCAVATION
6300						608	49001	6300	SY	CURB RAMP, AS PER PLAN
105						608	53000	105	EACH	TRUNCATED DOMES
500						608	12000	500	SF	5" CONCRETE WALK
500						609	98000	500	FT	CURB MISC.: CANTON CITY STANDARD
										PAVEMENT
5179						251	01000	5179	SY	PARTIAL DEPTH PAVEMENT REPAIR
4238						252	01500	4238	FT	FULL DEPTH PAVEMENT SAWING
942						253	01000	942	SY	PAVEMENT REPAIR
				92,477		254	01001	92,477	SY	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN
	157					304	20000	157	CY	AGGREGATE BASE
				13,872		407	13900	13,872	GAL	TACK COAT, 702.13
				3699		407	14000	3699	GAL	TACK COAT FOR INTERMEDIATE COURSE
				1927		424	10000	1927	CY	FINE GRADED POLYMER ASPHALT CONCRETE, TYPE A
				3853		448	46020	3853	CY	ASPHALT CONCRETE FOR INTERMEDIATE COURSE, TYPE 1, PG64-22
										SEWERS
	1					202	58001	1	EACH	MANHOLE REMOVED, AS PER PLAN
	50					603	01801	50	FT	8" CONDUIT, TYPE B, AS PER PLAN
		60				603	27201	60	FT	78" CONDUIT, TYPE B, AS PER PLAN
	1					604	31501	1	EACH	MANHOLE, NO. 3, AS PER PLAN
30						604	20600	30	EACH	CATCH BASIN ADJUSTED TO GRADE
90						604	20800	90	EACH	CATCH BASIN RECONSTRUCTED TO GRADE
140						604	34500	140	EACH	MANHOLE ADJUSTED TO GRADE
20						604	35500	20	EACH	MANHOLE RECONSTRUCTED TO GRADE
2000						604	50000	2000	POUNDS	SPECIAL - MISCELLANEOUS METAL
										TRAFFIC CONTROL
		30				632	26500	30	EACH	DETECTOR LOOP
				6.48		642	00200	6.48	MILE	LANE LINE, TYPE 1
				3.94		642	00300	3.94	MILE	CENTER LINE, TYPE 1
				2048		644	00400	2048	FT	CHANNELIZING LINE
				739		644	00500	739	FT	STOP LINE
				3229		644	00600	3229	FT	CROSSWALK LINE
				621		644	00700	621	FT	TRANSVERSE/DIAGONAL LINE
				217		644	00900	217	SF	ISLAND MARKING
				60		644	01300	60	EACH	LANE ARROW
				73		644	01510	73	FT	DOTTED LINE, 6"
										MAINTENANCE OF TRAFFIC
			450			614	11100	450	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR
			LUMP			614	12420	LUMP		DETOUR SIGNING
			16			614	12460	16	EACH	WORK ZONE SIGN (ALL PHASES)
			15			614	13000	15	EACH	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC
			1.5			614	18510	1.5	SIGN MONTH	PORTABLE CHANGEABLE MESSAGE SIGN
			19.44			614	20400	19.44	MILE	WORK ZONE LANE LINE, CLASS II
			10.08			614	21400	10.08	MILE	WORK ZONE CENTER LINE, CLASS II
			6144			614	23000	6144	FT	WORK ZONE CHANNELIZING LINE, CLASS I
			2217			614	26000	2217	FT	WORK ZONE STOP LINE, CLASS I
			200			614	40020	200	FT	PORTABLE CONCRETE BARRIER, 32"
										MISCELLANEOUS
						614	11000	LUMP		MAINTAINING TRAFFIC
						619	16010	8	MONTH	FIELD OFFICE, TYPE B
						623	10000	LUMP		CONSTRUCTION LAYOUT STAKING
						624	10000	LUMP		MOBILIZATION

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489-3381

GENERAL SUMMARY
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS

DESCRIPTION	DATE	BY

DRAWN BY: NJL
APPROVED BY:
FIELD BOOK:
FILE NAME: Gen Summary

DATE: 8/15/08
H. SCALE: N/A
V. SCALE: N/A

			DISTANCE (D)	AVERAGE WIDTH (W)	SURFACE AREA (A) A=DxW	254, (X" AVG.) PAVEMENT PLANING, ASPH. CONC., APP A/9	407, (0.15 GAL/SY) TACK COAT, 702.13 0.15*A 9	407, (0.04 GAL/SY) TACK COAT FOR INTER. 0.04*A 9	448 (1 1/2") A.C. FOR INT. COURSE 1.5*A 12*27	424 (3") POLY A.C., TYPE A 0.75*A 12*27
			FT	FT	SQ FT	SQ YD	GAL	GAL	CU YD	CU YD
MCKINLEY AVE.										
135+73	TO	136+02	29	52	1,508	167.56	25.13	6.70	6.98	3.49
136+02	TO	138+58	256	40	10,240	1137.78	170.67	45.51	47.41	23.70
138+58	TO	144+11	553	28	15,484	1720.44	258.07	68.82	71.69	35.84
CLEVELAND AVE.										
135+20	TO	141+10	590	44	25,960	2884.44	432.67	115.38	120.19	60.09
141+10	TO	144+11	3011	33	9,933	1103.67	165.55	44.15	45.99	22.99
144+11	TO	190+01	4590	44	210,960	22440.00	3366.00	897.6	935.00	467.5
190+01	TO	191+92	191	50	9,550	1061.11	159.17	42.44	44.21	22.11
191+92	TO	205+01	1309	56	73,304	8144.89	1221.73	325.8	339.37	169.69
205+01	TO	206+38	137	50	6,850	761.11	114.17	30.44	31.71	15.86
206+38	TO	207+74	136	44	5,984	664.89	99.73	26.6	27.70	13.85
207+74	TO	212+84	510	55	28,050	3116.67	467.5	124.67	129.86	64.93
212+84	TO	219+01	617	55	33,935	3770.56	565.58	150.82	157.11	78.55
219+01	TO	221+52	251	64	16,064	1784.89	267.73	71.4	74.37	37.19
221+52	TO	244+05	2253	55	123,915	13768.33	2065.25	550.73	573.68	286.84
244+05	TO	246+26	221	48	10,608	1178.67	176.80	47.15	49.11	24.56
246+26	TO	252+87	661	40	26,440	2937.78	440.67	117.51	122.41	61.20
252+87	TO	255+16	229	50	11,450	1272.22	190.83	50.89	53.01	26.50
255+16	TO	258+57	341	55	18,755	2083.89	312.58	83.36	86.83	43.41
258+57	TO	261+10	253	55	13,915	1546.11	231.92	61.84	64.42	32.21
261+10	TO	273+15	1205	40	48,200	5355.56	803.33	214.22	223.15	111.57
273+15	TO	275+45	230	47	10,810	1201.11	180.17	48.04	50.05	25.02
275+45	TO	279+83	438	54	23,652	2628.00	394.20	105.12	109.50	54.75
279+83	TO	282+13	230	47	10,810	1201.11	180.17	48.04	50.05	25.02
282+13	TO	305+86	2373	40	94,920	10546.67	1582.00	421.87	439.44	219.72
SUBTOTALS						92477.45	13871.62	3699.10	3853.23	1926.61
TOTALS CARRIED TO GENERAL SUMMARY						92477	13872	3699	3853	1927

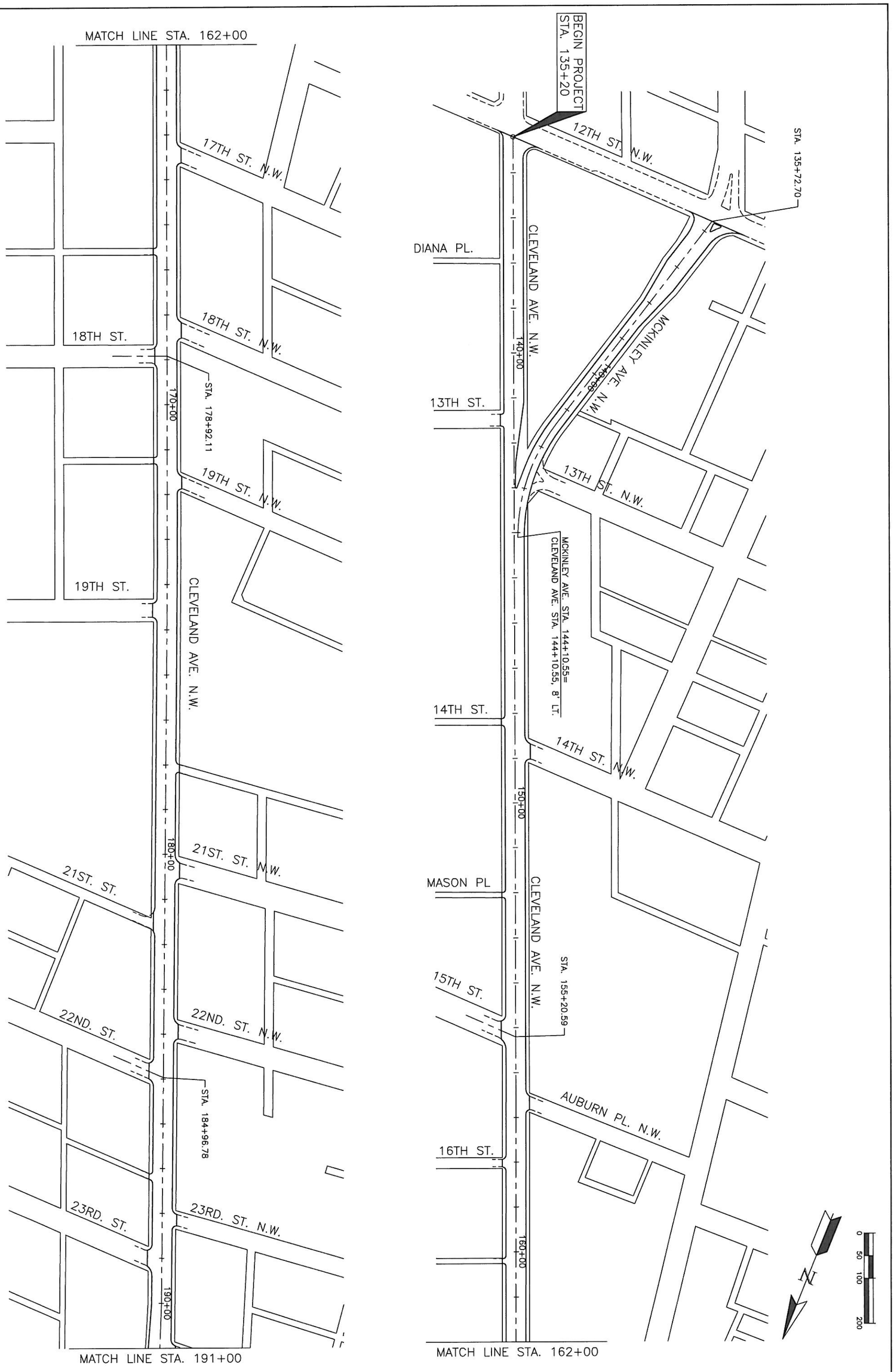
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489-3381

CALCULATIONS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
	DESCRIPTION	DATE	BY

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Calculations

DATE:
H. SCALE:
V. SCALE:



DATE:	DRAWN BY:	REVISIONS			CLEVELAND AVE. NW PAVING PROJECT
H. SCALE:	APPROVED BY:	DESCRIPTION	DATE	BY	
V. SCALE:	FIELD BOOK:				
SHEET 11 OF 22	FILE NAME: Plan 1				

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

DATE:	DRAWN BY:	REVISIONS			CLEVELAND AVE. NW PAVING PROJECT
H. SCALE:	APPROVED BY:	DESCRIPTION	DATE	BY	
V. SCALE:	FIELD BOOK:				
SHEET 12 OF 22	FILE NAME: Plan 2				

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

CLEVELAND AVE. NW PAVING PROJECT

REVISIONS	DESCRIPTION	DATE	BY

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Plan 3

DATE:
H. SCALE:
V. SCALE:
SHEET 13 OF 22

CENTER LINE

FROM	TO	LENGTH (MILES)	COMMENT
MCKINLEY AVE.			
142+59	144+10	0.03	
CLEVELAND AVE.			
142+70	144+10	0.03	
144+10	190+02	0.87	
190+02	191+98	0.07	ISLAND (2 LINES)
191+98	194+70	0.05	
194+70	195+20	0.02	ISLAND (2 LINES)
195+20	202+00	0.26	TWLTL (2 LINES)
202+00	202+50	0.02	ISLAND (2 LINES)
202+50	204+91	0.05	
204+91	205+52	0.02	ISLAND (2 LINES)
205+52	208+08	0.05	
208+08	209+04	0.04	ISLAND (2 LINES)
209+04	211+08	0.04	
211+08	211+58	0.02	ISLAND (2 LINES)
211+58	216+49	0.19	TWLTL (2 LINES)
216+49	217+49	0.04	ISLAND (2 LINES)
217+49	220+80	0.10	
220+80	221+89	0.04	ISLAND (2 LINES)
221+89	225+02	0.06	
225+02	225+52	0.02	ISLAND (2 LINES)
225+52	238+07	0.48	TWLTL (2 LINES)
238+07	238+57	0.02	ISLAND (2 LINES)
238+57	244+45	0.11	
244+45	245+87	0.05	ISLAND (2 LINES)
245+87	253+18	0.14	
253+18	255+18	0.08	ISLAND (2 LINES)
255+18	258+58	0.06	
258+58	260+55	0.07	ISLAND (2 LINES)
260+55	273+14	0.24	
273+14	275+90	0.10	ISLAND (2 LINES)
275+90	278+98	0.04	
278+98	281+57	0.10	ISLAND (2 LINES)
281+57	304+28	0.43	
TOTAL		3.94	

LANE LINE

FROM	TO	LENGTH (MILES)	COMMENT
MCKINLEY AVE.			
135+73	144+10	0.13	
CLEVELAND AVE.			
135+20	140+26	0.19	TWO LANE LINES
140+26	144+10	0.07	
144+10	304+87	6.09	TWO LANE LINES
TOTAL		6.48	

AUXILIARY

FROM	TO	CHANNEL LINE	STOP LINE	TRANS./ DIAG. LINES YELLOW	CROSS WALK LINES	ISLAND MARKING	DOTTED LINES	LANE ARROWS		
								TURN LEFT	TURN RIGHT	THRU
		FT	FT	FT	FT	SQ FT	FT	EACH	EACH	EACH
MCKINLEY AVE.										
135+73	144+10	451	65		156			2	2	4
CLEVELAND AVE.										
135+20	149+00				140					
149+00	163+00		44		183					
163+00	177+00		44		342					
177+00	191+00		44		173	10				
191+00	205+70	320	84	44	370	41		13		
205+70	220+00	331	107	125	328	53		11		
220+00	234+50	202	55	104	302	48	73	11		
234+50	249+00	325	66	40	357			10		
249+00	263+50	190	99	43	419	65		3		
263+50	276+50	50		120				1		
276+50	291+00	179	111	145	373			3		
291+00	304+87		20		86					
TOTAL		2,048	739	621	3,229	217	73	54	2	4

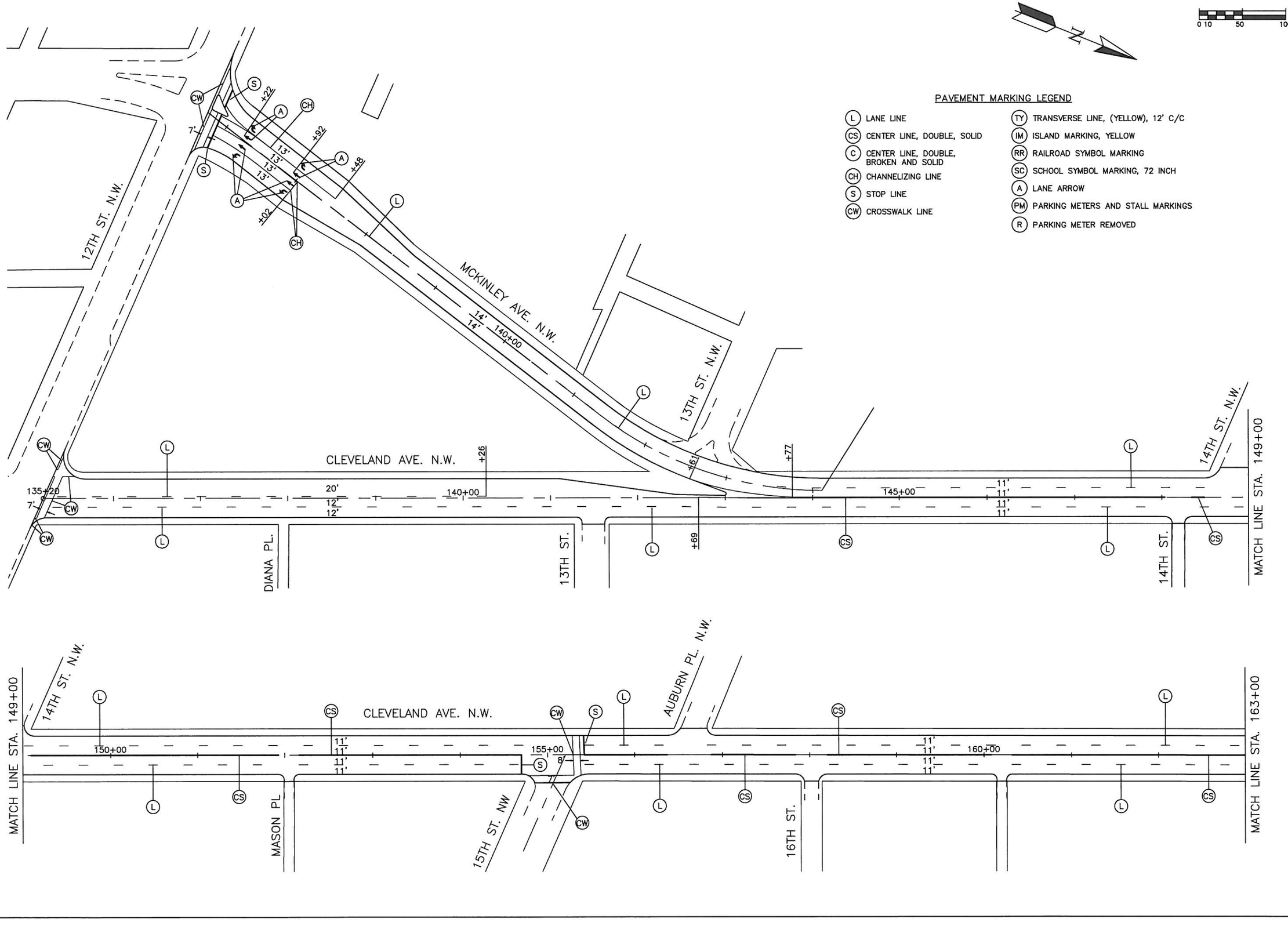
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

PAVEMENT MARKING SUB-SUMMARY
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS

DESCRIPTION	DATE	BY

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Pvmt Mark Sub-Sum
DATE:
H. SCALE:
V. SCALE:
SHEET 14 OF 22



OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489-3381

PAVEMENT MARKINGS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS			
DESCRIPTION	DATE	BY	

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Pavement Markings 1

DATE:
H. SCALE:
V. SCALE:
SHEET 15 OF 22

PAVEMENT MARKING LEGEND

- (L) LANE LINE
- (CS) CENTER LINE, DOUBLE, SOLID
- (C) CENTER LINE, DOUBLE, BROKEN AND SOLID
- (CH) CHANNELIZING LINE
- (S) STOP LINE
- (CW) CROSSWALK LINE
- (TY) TRANSVERSE LINE, (YELLOW), 12' C/C
- (IM) ISLAND MARKING, YELLOW
- (RR) RAILROAD SYMBOL MARKING
- (SC) SCHOOL SYMBOL MARKING, 72 INCH
- (A) LANE ARROW

0 10 50 100

N

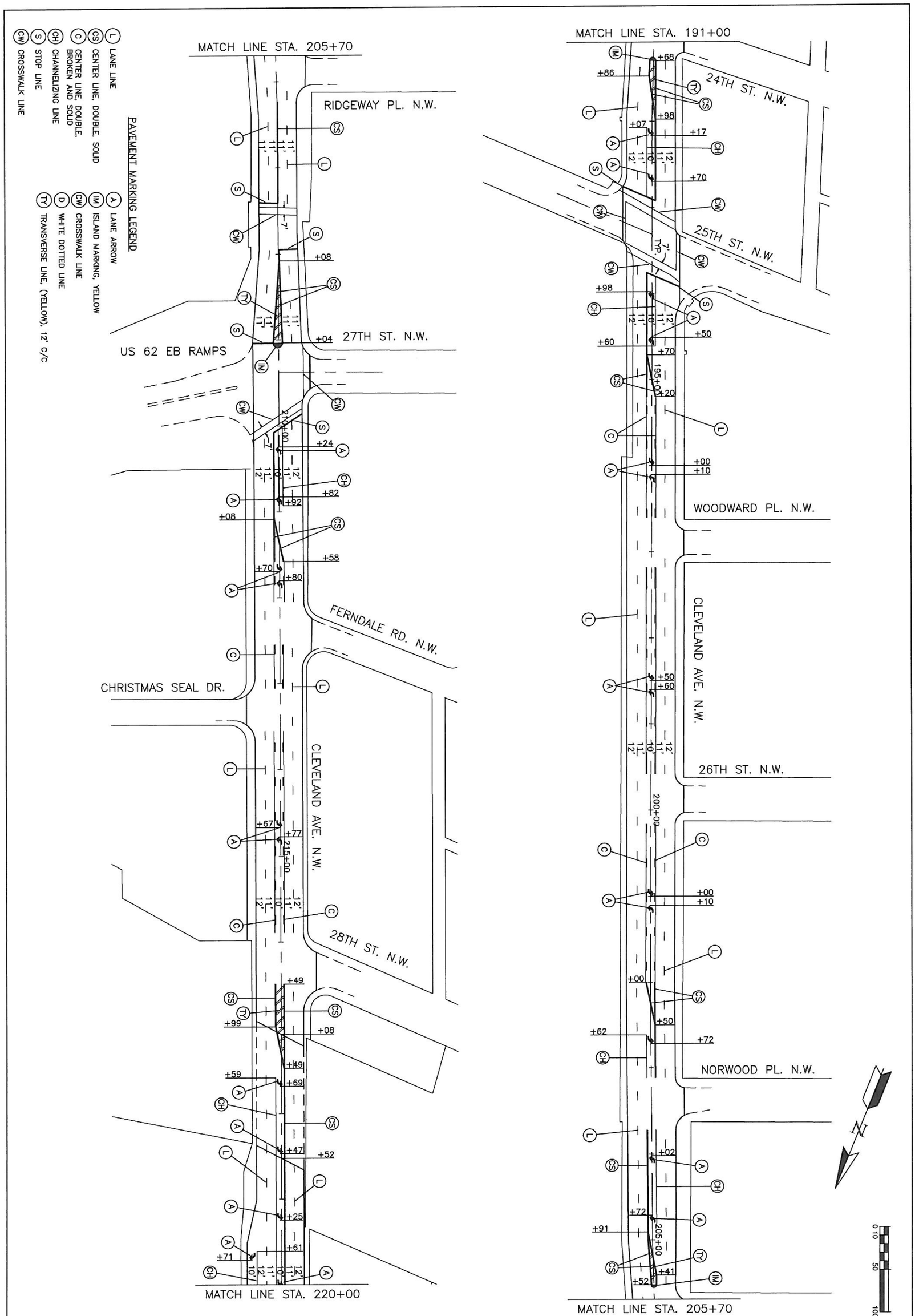
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3351

PAVEMENT MARKINGS
CLEVELAND AVE. NW PAVING PROJECT

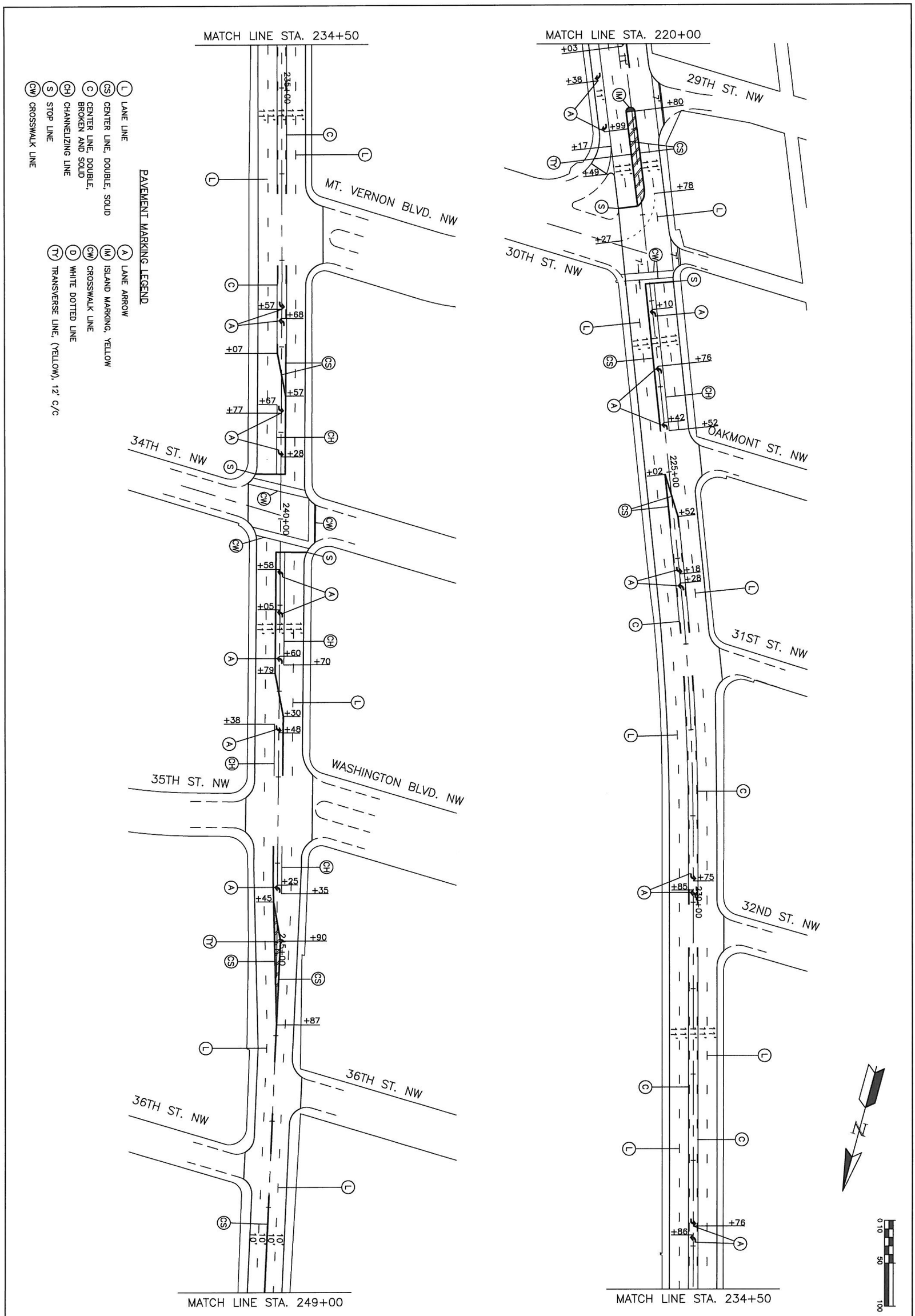
REVISIONS			
DESCRIPTION	DATE	BY	

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Pavement Markings 2

DATE:
H. SCALE:
V. SCALE:
SHEET 16 OF 22



DATE:	DRAWN BY:	REVISIONS			PAVEMENT MARKINGS CLEVELAND AVE. NW PAVING PROJECT	OFFICE OF THE CITY ENGINEER CANTON, OHIO DANIEL J. MOEGLIN, P.E., CITY ENGINEER 2436 30th STREET N.E. 44705 (330)489-3381
H. SCALE:	APPROVED BY:	DESCRIPTION	DATE	BY		
V. SCALE:	FIELD BOOK:					
SHEET 17 OF 22	FILE NAME: Pavement Markings 3					



DATE:	DRAWN BY:	REVISIONS			PAVEMENT MARKINGS CLEVELAND AVE. NW PAVING PROJECT	OFFICE OF THE CITY ENGINEER CANTON, OHIO DANIEL J. MOEGLIN, P.E., CITY ENGINEER 2436 30th STREET N.E. 44705 (330)489-3381
H. SCALE:	APPROVED BY:	DESCRIPTION	DATE	BY		
V. SCALE:	FIELD BOOK:					
SHEET 18 OF 22	FILE NAME: Pavement Markings 4					

PAVEMENT MARKING LEGEND

- (L) LANE LINE
- (CS) CENTER LINE, DOUBLE, SOLID
- (C) CENTER LINE, DOUBLE, BROKEN AND SOLID
- (CH) CHANNELIZING LINE
- (S) STOP LINE
- (CW) CROSSWALK LINE
- (TY) TRANSVERSE LINE, (YELLOW), 12' C/C
- (IM) ISLAND MARKING, YELLOW
- (RR) RAILROAD SYMBOL MARKING
- (SC) SCHOOL SYMBOL MARKING, 72 INCH
- (A) LANE ARROW

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489-3381

PAVEMENT MARKINGS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS	DESCRIPTION	DATE	BY

DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Pavement Markings 5

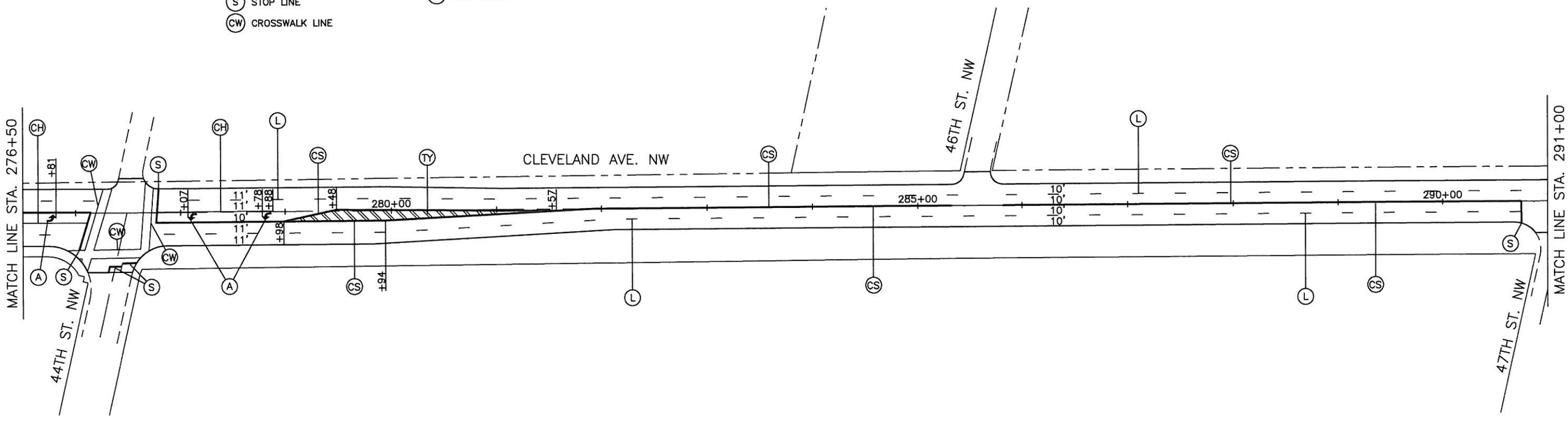
DATE:
H. SCALE:
V. SCALE:
SHEET 19 OF 22

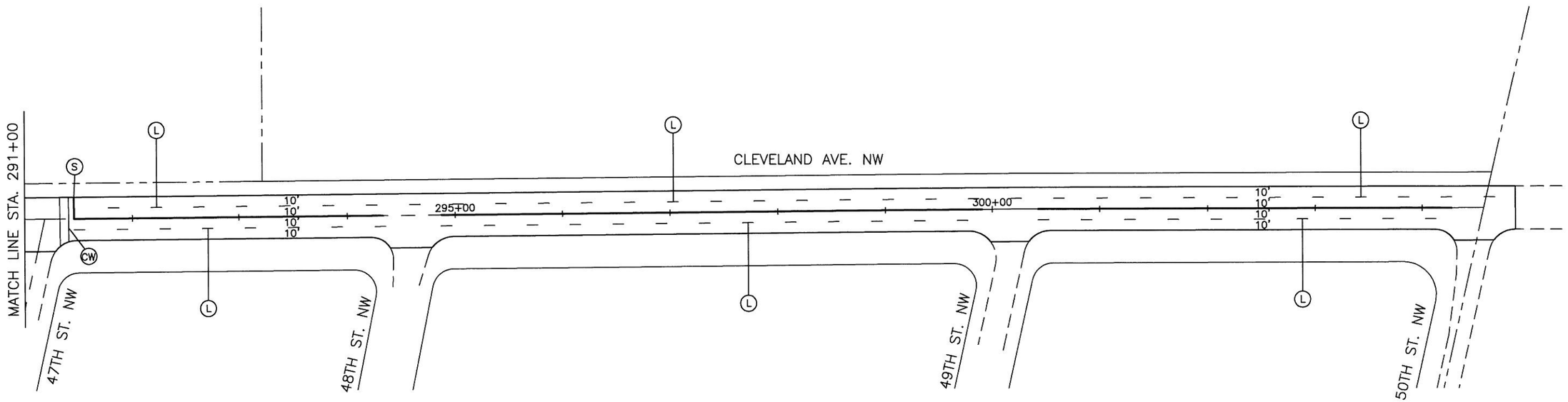
PAVEMENT MARKING LEGEND

- (L) LANE LINE
- (CS) CENTER LINE, DOUBLE, SOLID
- (C) CENTER LINE, DOUBLE, BROKEN AND SOLID
- (CH) CHANNELIZING LINE
- (S) STOP LINE
- (CW) CROSSWALK LINE
- (TY) TRANSVERSE LINE, (YELLOW), 12' C/C
- (IM) ISLAND MARKING, YELLOW
- (RR) RAILROAD SYMBOL MARKING
- (SC) SCHOOL SYMBOL MARKING, 72 INCH
- (A) LANE ARROW

N

0 10 50 100





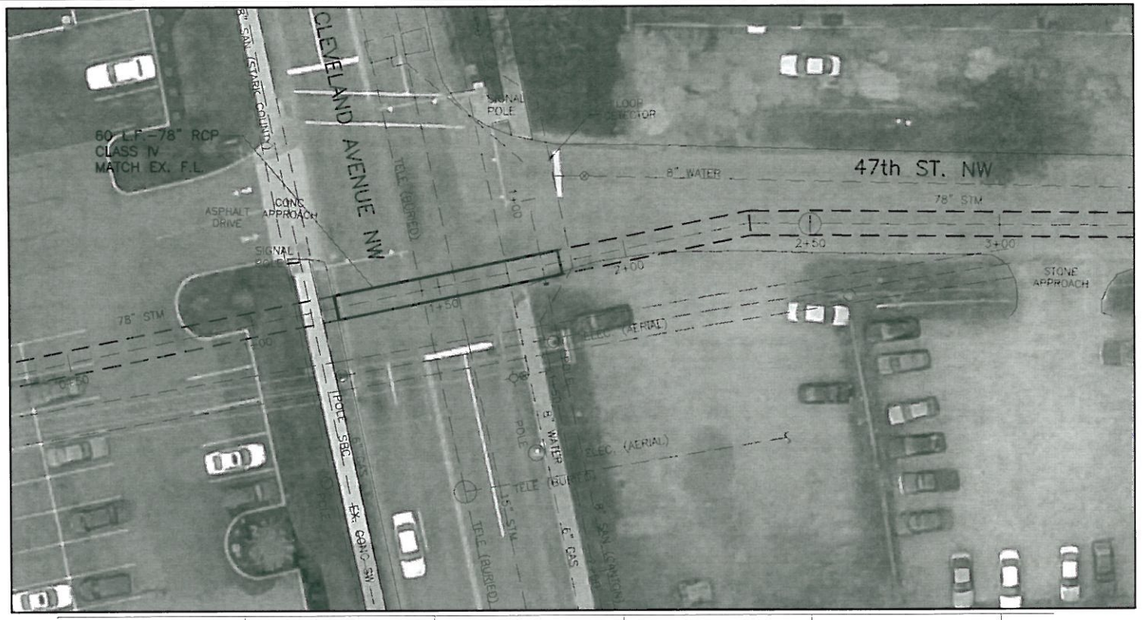
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2456 30th STREET N.E. 44705 (330)489-3381

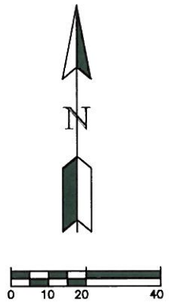
PAVEMENT MARKINGS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS	DESCRIPTION	DATE	BY

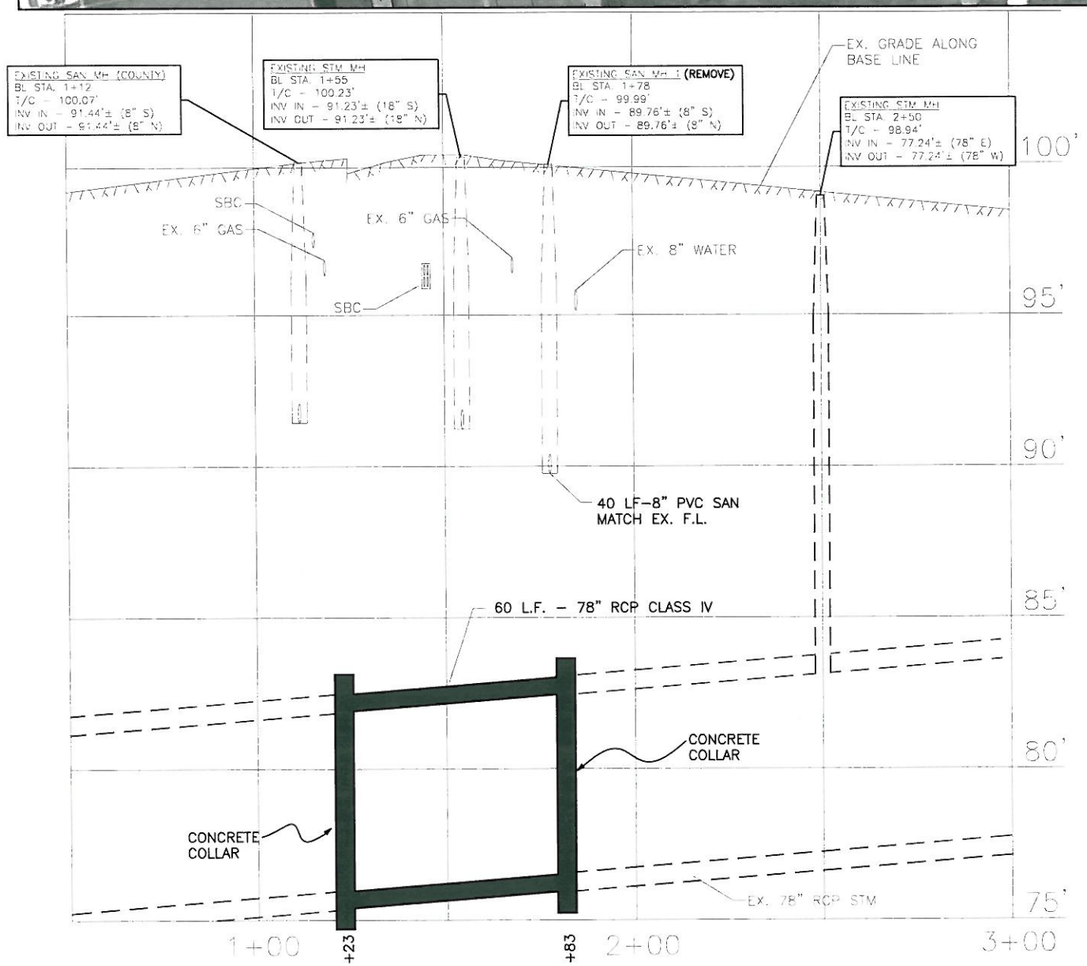
DRAWN BY:
APPROVED BY:
FIELD BOOK:
FILE NAME: Pavement Markings 6

DATE:
H. SCALE:
V. SCALE:
SHEET 20 OF 22

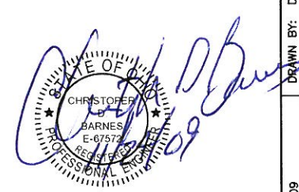




NOTES – 1.) BASE LINE IS ALONG CENTERLINE OF EXISTING STORM SEWER.
2.) SOME, BUT NOT ALL, AERIAL LINES ARE SHOWN FOR CLARITY. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE SITE FOR ANY POTENTIAL CONFLICTS WITH THE SAME.



STATION REFERENCES
1+23 – BEGIN 78" RCP CLASS IV, MATCH EX. F.L.
1+83 – END 78" RCP CLASS IV, MATCH EX. F.L.



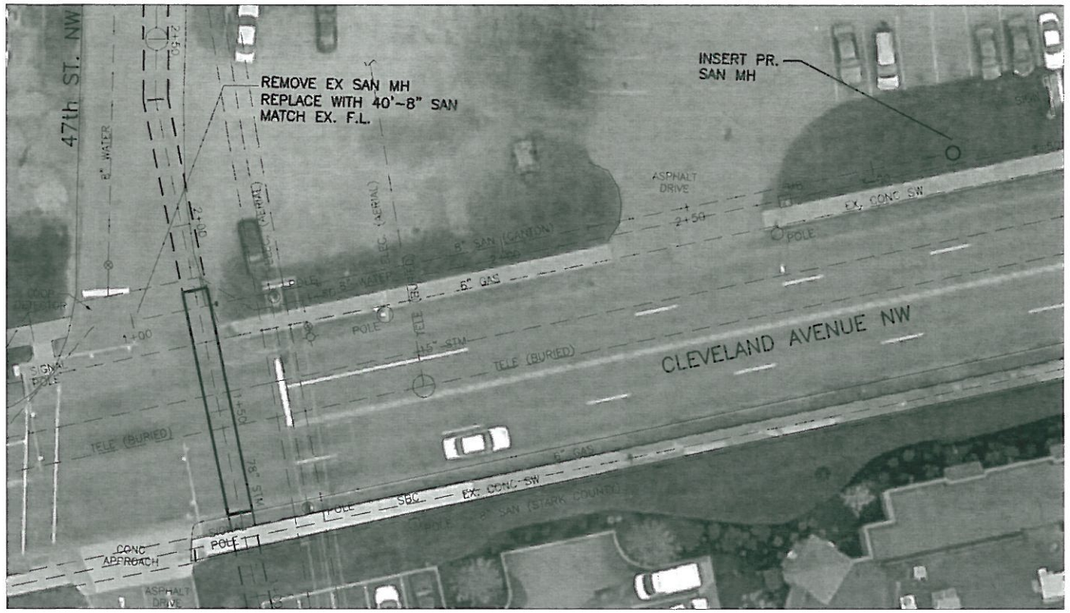
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

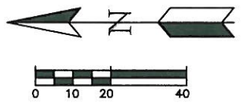
STORM SEWER PLANS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS		
DESCRIPTION	DATE	BY

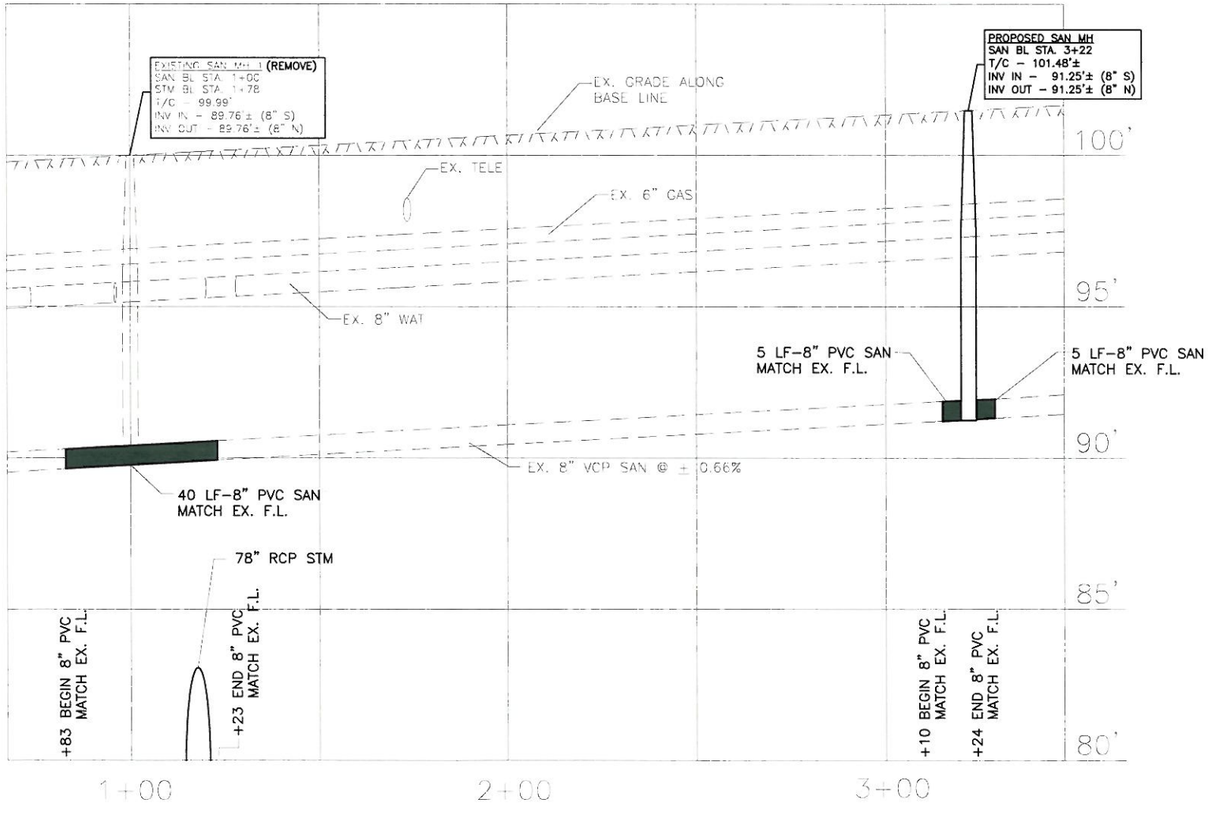
DRAWN BY: DJH
APPROVED BY: CDB
FIELD BOOK:
FILE NAME: Sewer Plans

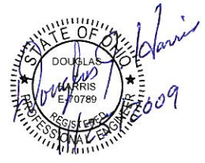
DATE: 5/01/09
H. SCALE: 1" = 20'
V. SCALE: 1" = 5'
SHEET 21 OF 22





NOTES – 1.) BASE LINE IS ALONG CENTERLINE OF EXISTING SANITARY SEWER ON THE EAST SIDE OF CLEVELAND AVENUE NW.
2.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS OF THE PROPOSED MANHOLE PRIOR TO MANUFACTURING.





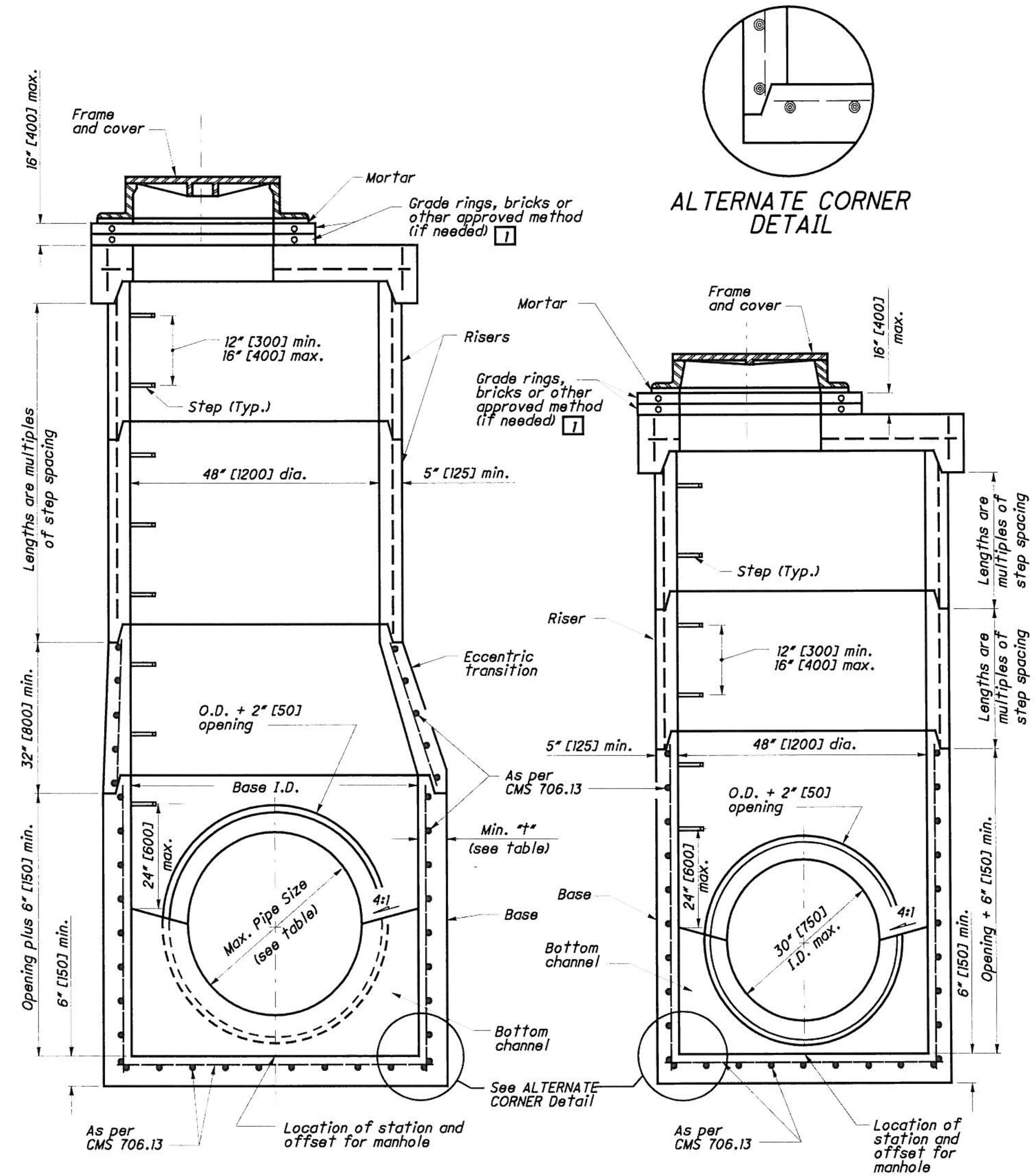
OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

SANITARY SEWER PLANS
CLEVELAND AVE. NW PAVING PROJECT

REVISIONS	DESCRIPTION	DATE	BY

DRAWN BY: DJH
APPROVED BY: DJH
FIELD BOOK:
FILE NAME: Sewer Plans

DATE: 5/01/09
H. SCALE: 1" = 20'
V. SCALE: 1" = 5'
SHEET 22 OF 22



60" to 108" [1500 to 2750] PRECAST BASE

SEE TABLE FOR MAXIMUM PIPE SIZES

48" [1200] PRECAST BASE

FOR 30" [750] AND SMALLER PIPE

SECTION VIEWS OF REINFORCED PRECAST MANHOLES

NOTES

GENERAL: With normal soil and site conditions, this standard precast manhole may be used for any required manhole depth.
Sections of the precast manhole shall be cast and assembled with either all tongue or all groove ends up. Lift holes may be provided in each section for handling.
Handling device for the flat slab shall be left in place.

TOP: This section shall be a flat slab, unless an eccentric cone is specified.

TRANSITION (OR REDUCER): This section can be either eccentric cone or flat slab.

BASE: Manhole No. 3 is shown with a monolithic floor and riser which may be cast in one or two operations. A permissible alternate is to cast and ship the floor and barrel separately. Openings for inlet and outlet pipes shall be provided, either when the unit is cast or later, to meet project requirements. Bottom channels may be formed of concrete, precast in the base or field constructed as shown on SCD **MH-1.1 and MH-3.1.**

RISER SECTIONS: Openings for 18" [450] and smaller inlet pipes may be either prefabricated, or cut in the field provided the sides of the pipe at the springline do not project into the manhole.

CONNECTIONS: Connections between precast manhole sections, and pipes on sanitary sewers, may be sealed with resilient connectors conforming to ASTM C 923.

JOINT SEAL: Seal between precast manhole sections on sanitary sewers shall be resilient and flexible gasket joints per CMS 706.11.

OPENINGS: The maximum pipe opening shall be the O.D. of the pipe being supplied plus 2" [50] when fabricated or field cuts. Fill any voids per CMS 601.

MATERIALS: Materials for bases and other precast sections, including reinforcement not specified hereon, shall comply with the requirements of CMS 706.13.

DROP PIPE: When specified on the plans, drop pipe shall be constructed as shown on **SCD MH-3.1.**

STEPS, FRAMES AND COVERS: Shall comply with the requirements set forth on **SCD MH-1.1.**

TOP SLAB REBAR: Reinforcing steel used within the top slab shall be epoxy coated.

LEGEND

[1] Reconstruction to grade only. Approved materials are kept on file by the Office of Materials Management.

MAXIMUM PIPE SIZES		
BASE I.D.	**MIN. "t"**	**MAX. PIPE SIZE**
60" [1500]	5" [125]	36" [900]
72" [1800]	6" [150]	48" [1200]
84" [2100]	7" [175]	54" [1350]
90" [2250]	7½" [190]	60" [1500]
96" [2400]	8" [200]	66" [1650]
108" [2750]	9" [230]	72" [1800]

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
STATE HYDRAULIC ENGINEER

REVISIONS
7-20-01
7-19-02
7-15-05
1-20-06

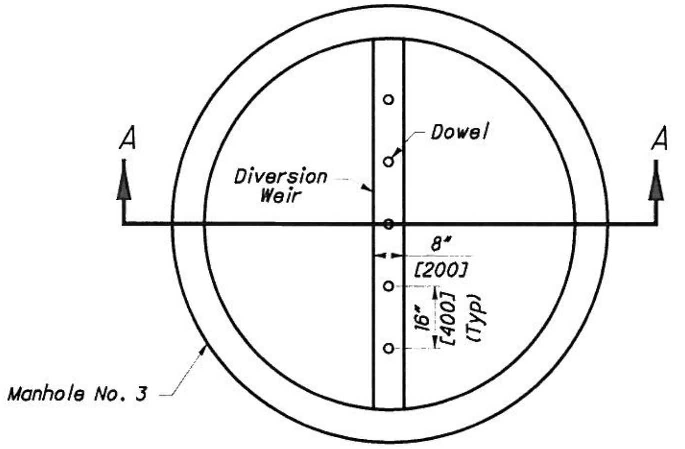
ROADWAY HYDRAULIC ENGINEER: J. Stains

ALL METRIC DIMENSIONS (IN BRACKETS [ ]) ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

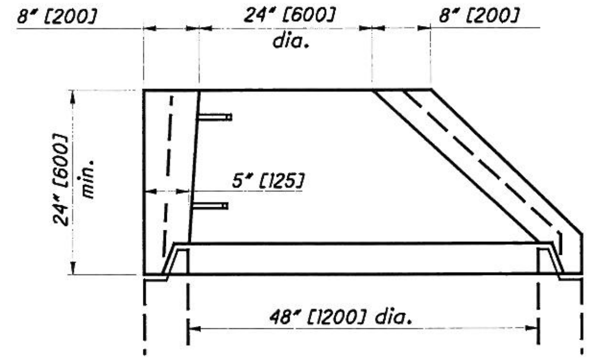
OFFICE OF STRUCTURAL ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING
MANHOLE No. 3

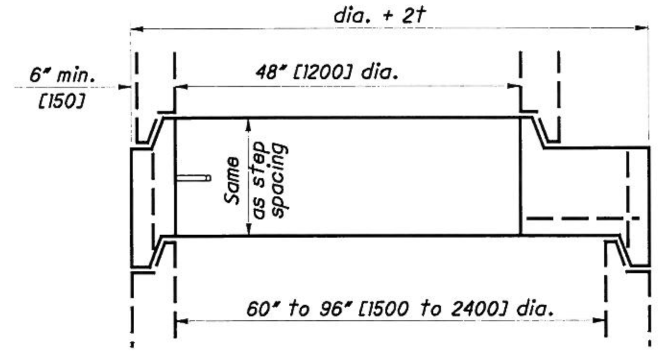
SCD NUMBER
MH-1.2



MANHOLE NO. 3 W/
__" BASE I.D. AND __" WEIR
(NTS)



ALTERNATE
ECCENTRIC CONE TOP
(Only if specified)



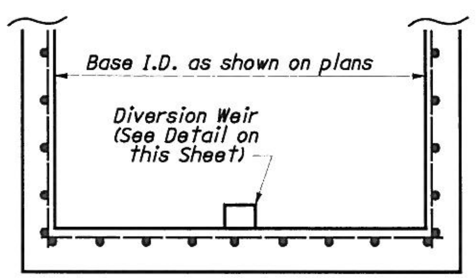
FLAT SLAB TRANSITION

NOTES

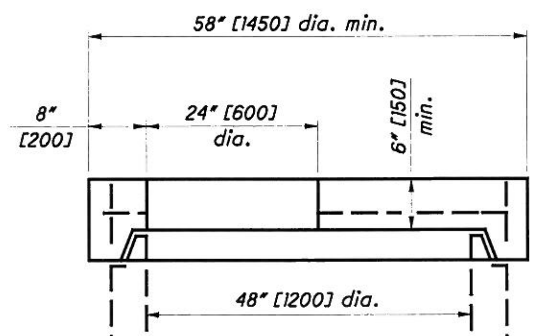
MANHOLE NO. 3 W/___" BASE I.D. AND ___" DIVERSION WEIR: Furnish manhole base with precast diversion weir or construct diversion weir from Structure Concrete, Class C or Brick and Masonry Units conforming to CMS 604. A bottom channel section for the manhole is not required when a diversion weir is specified on the plans.

Place diversion weir perpendicular to flow of inflowing trunk sewer. Dowel concrete or masonry units into the base of the manhole to a depth of 3" [75] using epoxy coated #4 reinforcing bars. Start dowels at the center of the diversion weir and space 16" [400] on center across the entire weir.

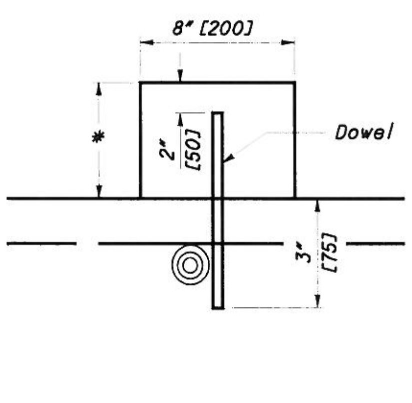
All materials and labor, including excavation and backfill, shall be paid for at the contract price for **ITEM 604 - MANHOLE NO. 3 WITH ___" BASE I.D. AND ___" DIVERSION WEIR.**



SECTION A-A
(NTS)

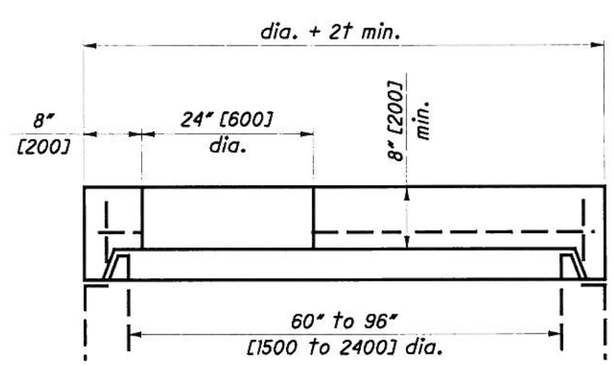


FLAT SLAB TOP



* Furnish weir height as shown in plans.

DIVERSION WEIR DETAIL
(NTS)



FLAT SLAB TOP

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE HYDRAULIC ENGINEER

REVISIONS
7-20-01
7-19-02
7-15-06
7-20-06

ROADWAY HYDRAULIC ENGINEER
J. Stains

ALL METRIC DIMENSIONS (IN BRACKETS [ ]) ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

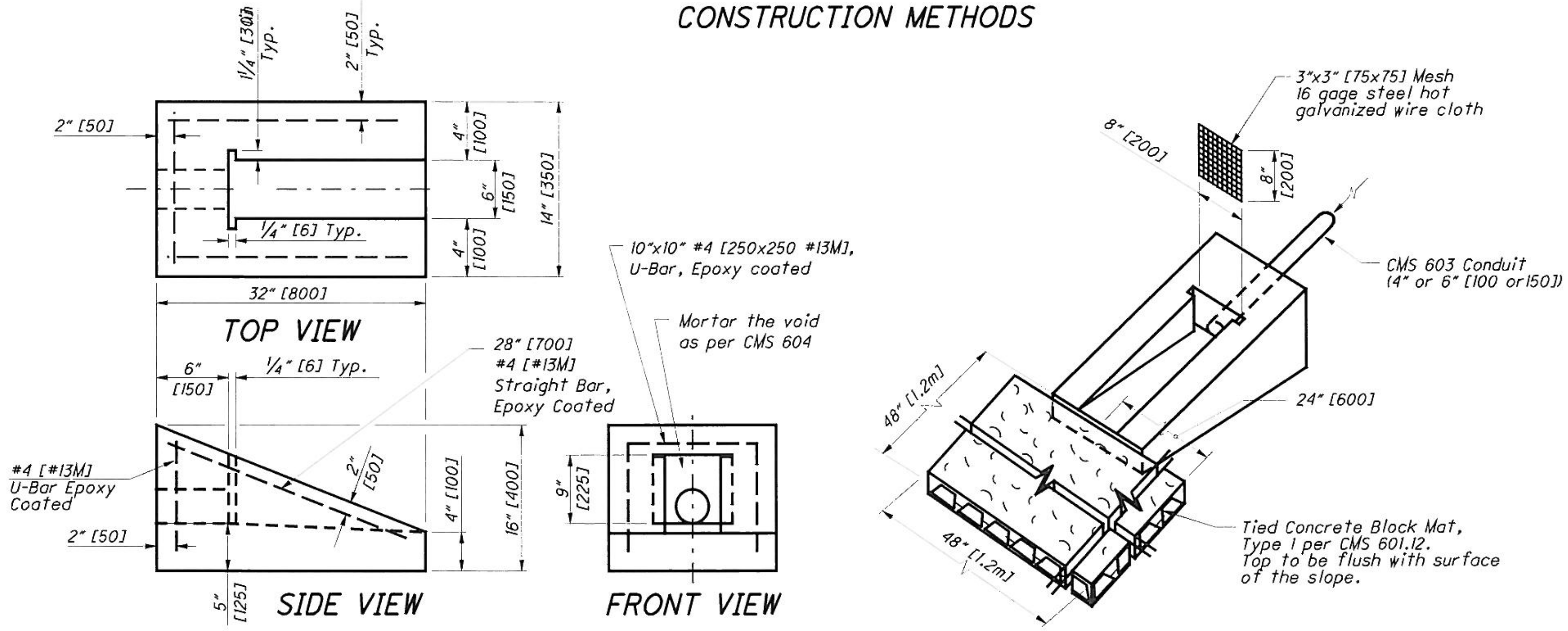
OFFICE OF STRUCTURAL ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING

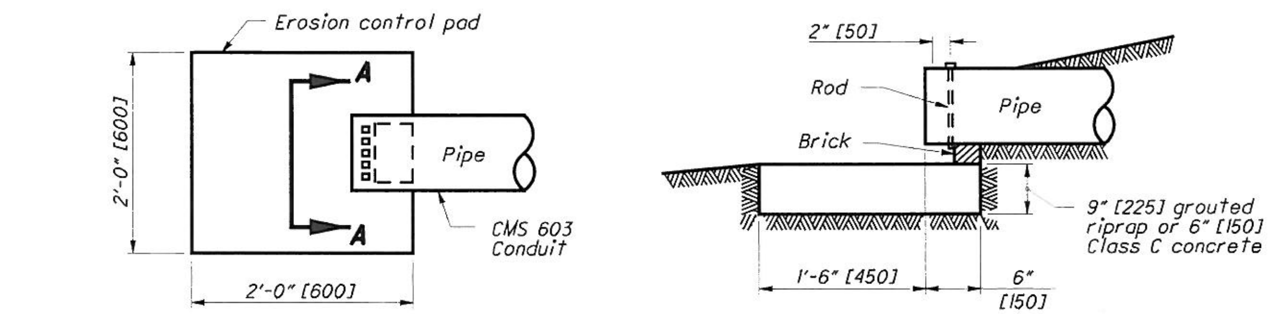
MANHOLE No. 3

SCD NUMBER
MH-1.2

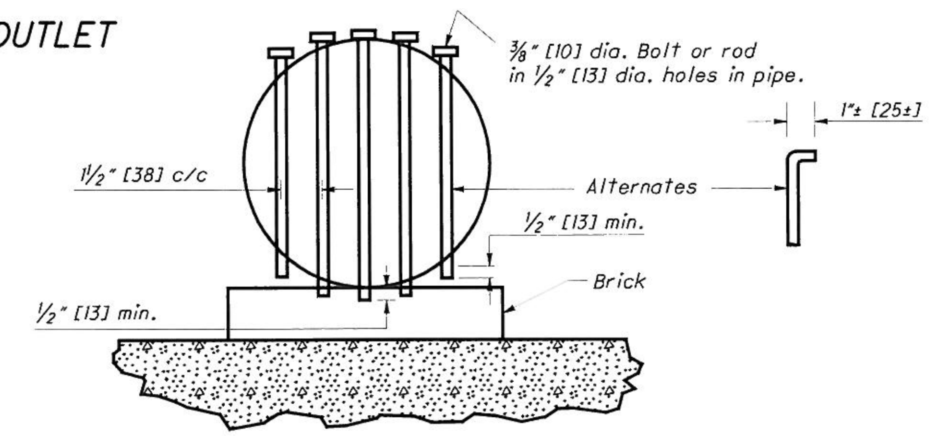
CONSTRUCTION METHODS



PRECAST REINFORCED CONCRETE OUTLET



EROSION CONTROL PAD AND ANIMAL GUARD FOR OUTLET PIPE



SECTION A-A

CONDUIT SIZE	4" [100]	6" [150]	8" [200]	10" [250]	12" [300]	15" [375]	18" [450]
No. of Bolts	2	3	5	6	7	9	11

NOTES

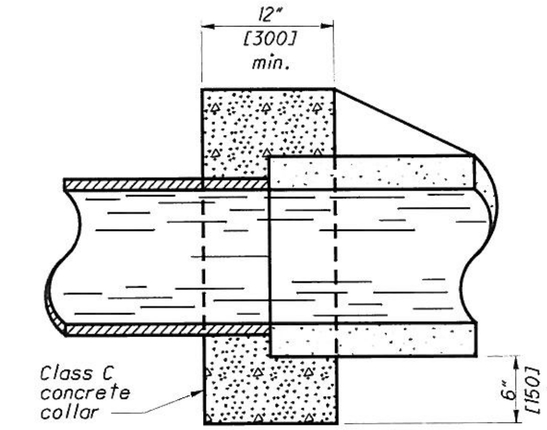
MASONRY COLLARS: A masonry collar shall be provided where plans require that a pipe extension be joined to the end of an existing pipe with a butt joint. The cost shall be included in the unit price bid for the new conduit.

EROSION CONTROL PAD AND ANIMAL GUARDS: These items shall be provided at the outlet end of all farm drains except where they outlet into a drainage structure. The steel bolts or rods for the animal guard shall be galvanized per CMS 710.06. In lieu of drilling or punching the ½" [13] diameter holes into the pipe, a metal collar meeting all of the above requirements may be clamped onto the pipe if approved by the Engineer.

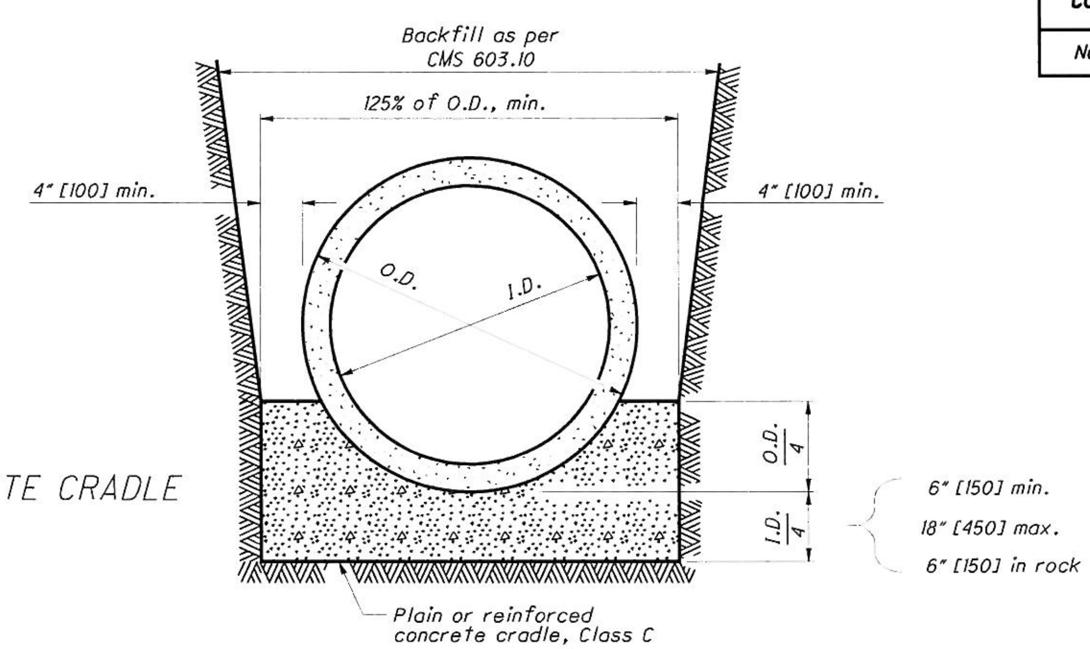
PAYMENT: Erosion control pads, masonry collars, and animal guards shall be included in the unit price bid for **Item 603 - __ inch [mm] Conduit, Type __ .**

PRECAST REINFORCED CONCRETE OUTLET: The concrete outlet shall meet the requirements of CMS 604.

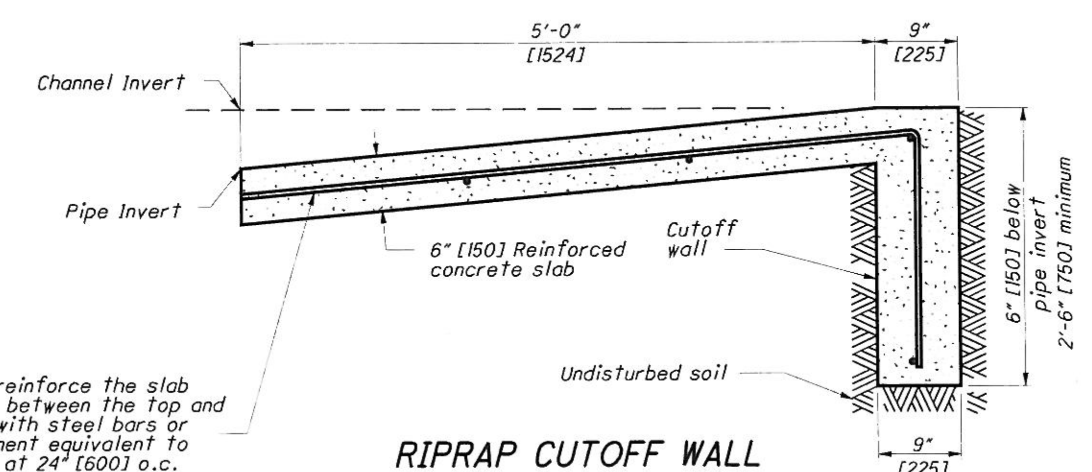
PAYMENT: The precast reinforced concrete outlet shall be paid at the contract unit price bid for **Item 604 - Precast Reinforced Concrete Outlet.** The Mortar; Tied Concrete Block Mat, Type 1, and Wire Mesh shall be included in the unit price bid for **Item 601 - Tied Concrete Block Mat, Type 1.**



MASONRY COLLAR



CONCRETE CRADLE



As per CMS 601.04.D, reinforce the slab approximately midway between the top and bottom of the slab, with steel bars or fabricated reinforcement equivalent to #3 [#10M] round bars, at 24" [600] o.c. in two directions, or wire fabric according to SCD BP-1.1.

RIPRAP CUTOFF WALL

The cost of the cutoff wall shall be included in the unit price bid for Item 601 Riprap using 6" [150] reinforced concrete slab.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
STATE HYDRAULIC ENGINEER

REVISIONS
7-20-01
7-19-02
7-18-03
1-21-05
10-21-05
4-21-06

ROADWAY HYDRAULIC ENGINEER J. Stains

ALL METRIC DIMENSIONS (IN BRACKETS [ ]) ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

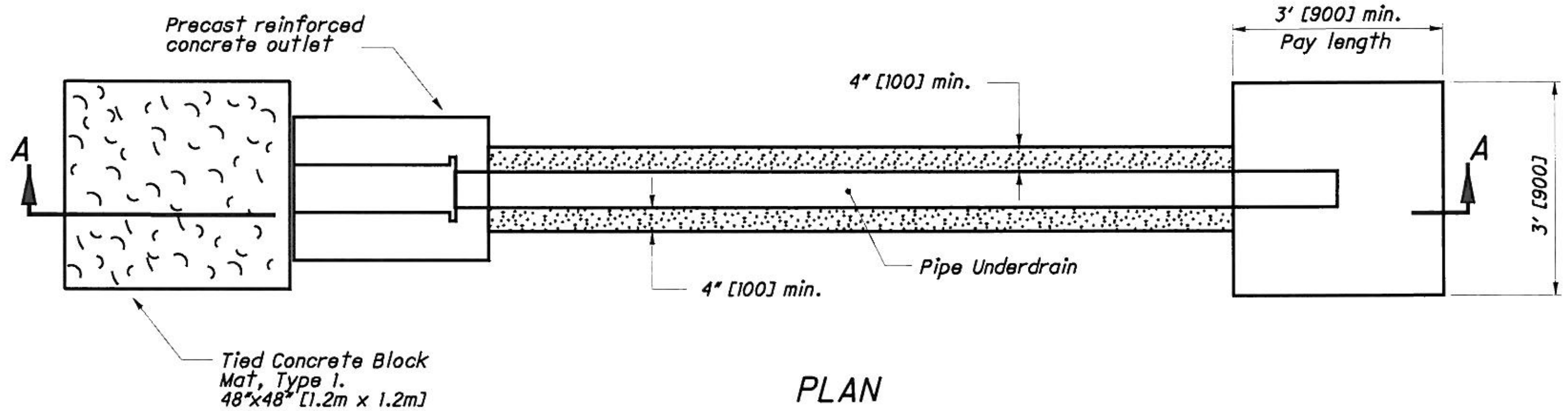
OFFICE OF STRUCTURAL ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING

OUTLETS, DRAINS AND SEWERS

SCD NUMBER **DM-1.1**

1/2



PLAN

NOTES

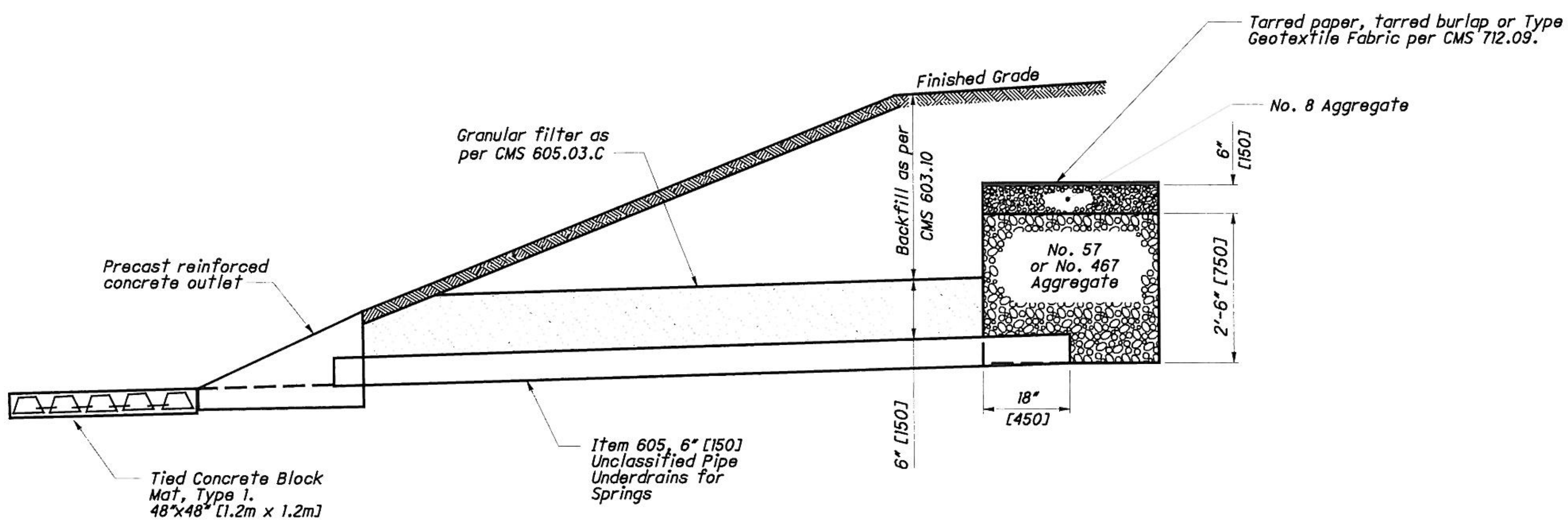
SPRING DRAIN: Aggregates, tarred paper, tarred burlap, or geotextile fabric backfill and necessary excavation for spring drains shall be included for payment in the unit price bid per Foot [Meter] for **Item 605, Aggregate Drains for Springs.**

PAYMENT: The pipe shall be included in the unit price bid per Foot [Meter] for **Item 605 - 6" [150] Unclassified Pipe Underdrains for Springs.**

PRECAST REINFORCED CONCRETE OUTLET: The concrete outlet shall meet the requirements of CMS 604.

PAYMENT: The precast reinforced concrete outlet shall be paid at the contract unit price bid for **Item 604 - Precast Reinforced Concrete Outlet.**

The Mortar; Tied Concrete Block Mat, Type 1; and Wire Mesh shall be included in the unit price bid for **Item 601, Tied Concrete Block Mat, Type 1.**



SECTION A-A

SPRING DRAIN DETAIL

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE HYDRAULIC ENGINEER

REVISIONS
7-20-01
7-19.02
7-18-03
1-21-05
10-21-05
4-21-06

ROADWAY HYDRAULIC ENGINEER J. Stains

ALL METRIC DIMENSIONS (IN BRACKETS [ ]) ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

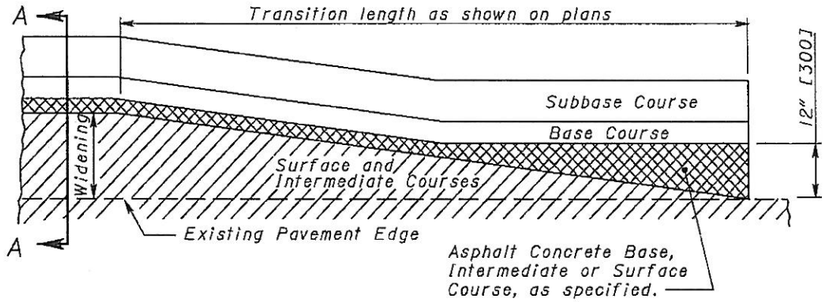
OFFICE OF STRUCTURAL ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING

OUTLETS, DRAINS AND SEWERS

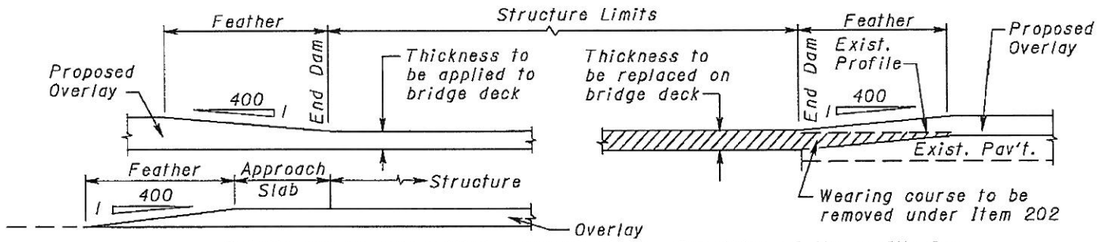
SCD NUMBER **DM-1.1**

2/2



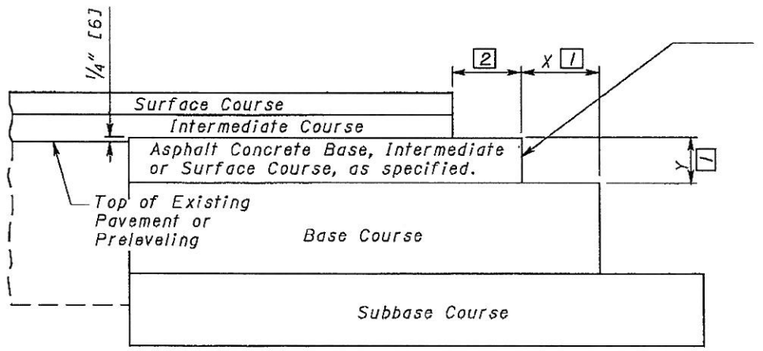
PLAN

MERGING EDGE OF PAVEMENT WIDENING WITH EDGE OF EXISTING PAVEMENT



Details assume non-settled approach slabs. Smoothing of the profile for settlement is required per plan grades or as directed by the Engineer.

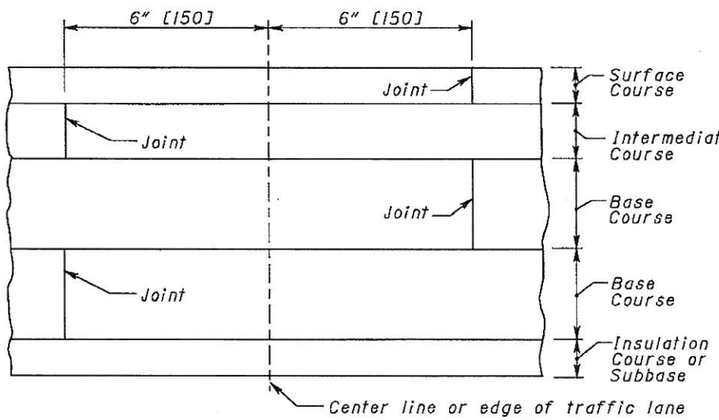
FEATHERING AT STRUCTURES



The Asphalt Concrete in the upper part of the base widening shall finish approximately 1/4" [6] above the edge of the existing pavement where no preleveling is used. Where a preleveling (using intermediate course material) is specified it shall be placed prior to excavation of the widening trench and the upper course of the base widening shall finish approximately 1/4" [6] above the preleveling.

SECTION A-A

COURSE DETAIL FOR WIDENING



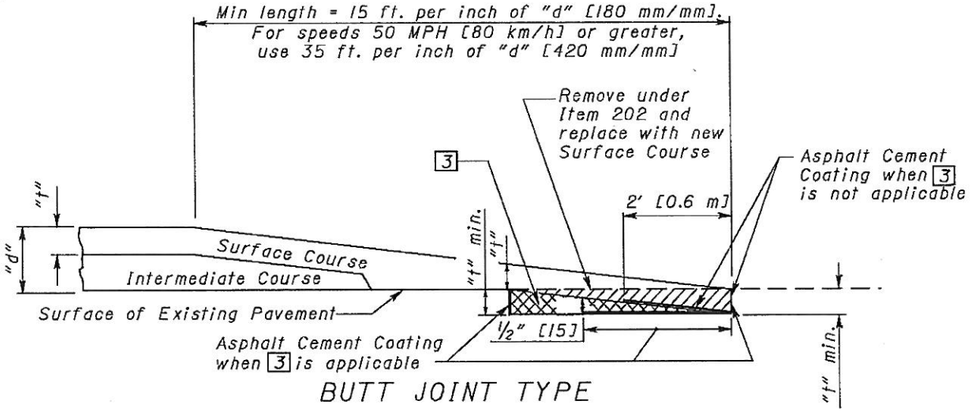
LAPPING LONGITUDINAL JOINTS

LEGEND

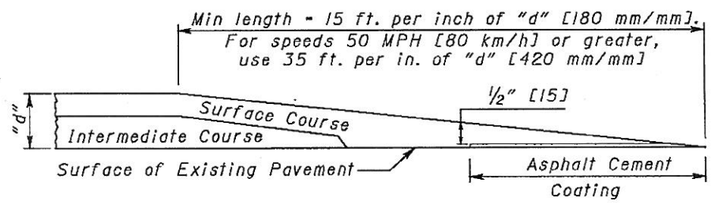
1 The extended width (X) of a base or subbase course shall be equal to the depth (Y) of the overlaying course or 6" [150], whichever is greater, or as shown on the plans.

2 The extended width shall be equal to the thickness of the surface course plus the intermediate course, or 4 inches [100], whichever is greater.

3 Permissible removal and replacement.



BUTT JOINT TYPE



TAPER EDGE TYPE

NOTE: Either butt or taper type may be used unless type is specified by the plan.

PLACING FEATHERED AREAS

Values for "t" and "d" are obtained from the plan.

THIS DRAWING REPLACES BP-3.1 DATED 7-16-04.

OHIO DEPARTMENT OF TRANSPORTATION
10-19-07
DATE
ROADWAY DESIGN ENGINEER

STDS. ENGR. D. Focke

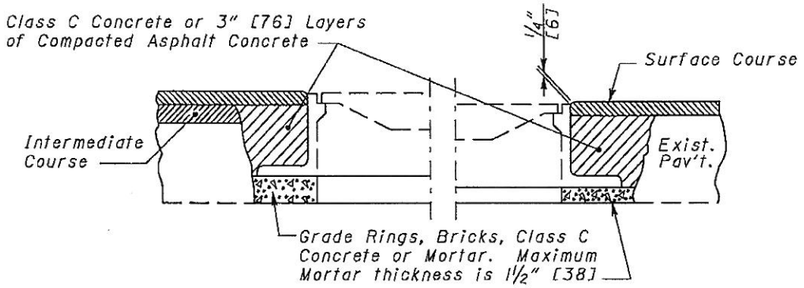
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

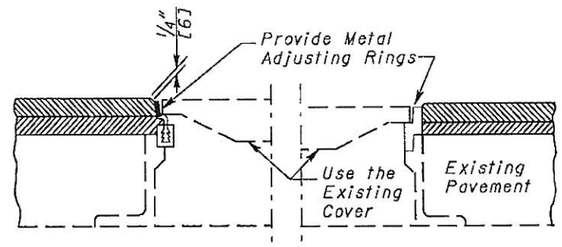
STANDARD ROADWAY CONSTRUCTION DRAWING
ASPHALT PAVING

NUMBER BP-3.1

1 / 2



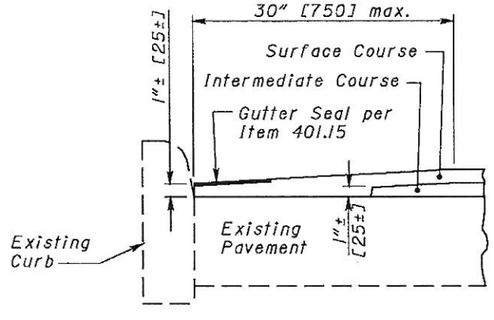
USING CONCRETE OR MORTAR



USING METAL ADJUSTING RINGS

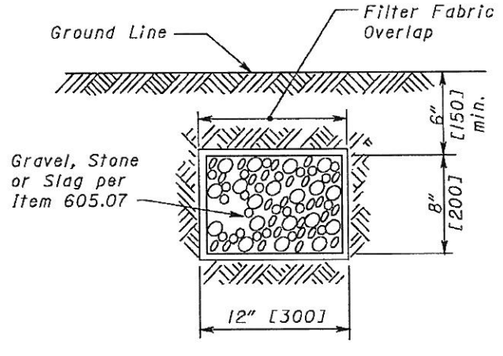
Metal adjusting rings shall:
(a) attach securely to the existing frame by welding or mechanical devices;
(b) consist either of cast metal having an integral rim and seat, or be fabricated metal with a sturdy connection between the seat and rim; and
(c) provide an even seat for the manhole cover.
In addition, the adjusting ring type shall be a design acceptable to the local governmental agency responsible for street and sewer maintenance. Any installation unacceptable to the Engineer shall be replaced by the Contractor at his expense.

MANHOLES ADJUSTED TO GRADE



Special care shall be taken during construction to obtain maximum compaction of bituminous concrete in gutters.

GUTTER FINISH



Aggregate drains to be placed where and as directed by Engineer. Provide Filter Fabric when specified as a separate pay item.

AGGREGATE DRAIN

THIS DRAWING REPLACES BP-3.1 DATED 7-16-04.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER — DATE 10-19-07

STDS. ENGR. D. Focke

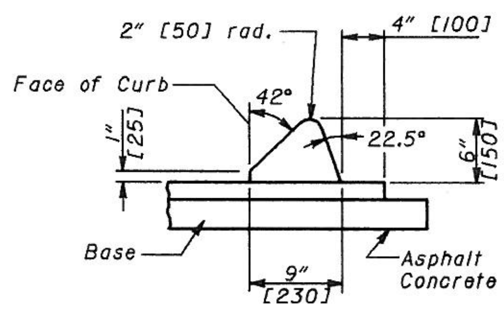
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

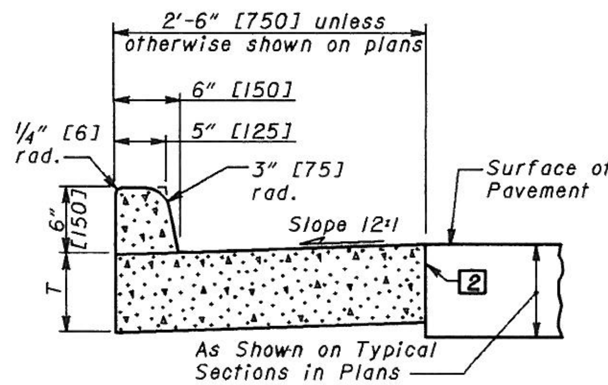
STANDARD ROADWAY CONSTRUCTION DRAWING
ASPHALT PAVING

NUMBER BP-3.1

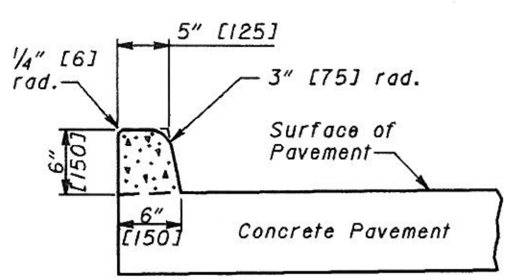
2/2



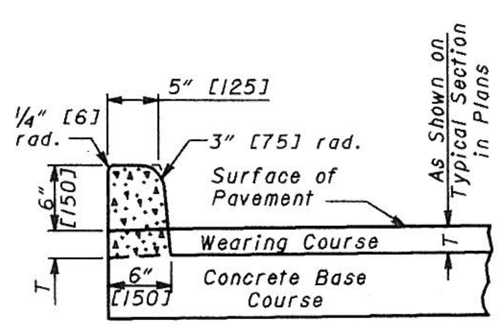
TYPE I



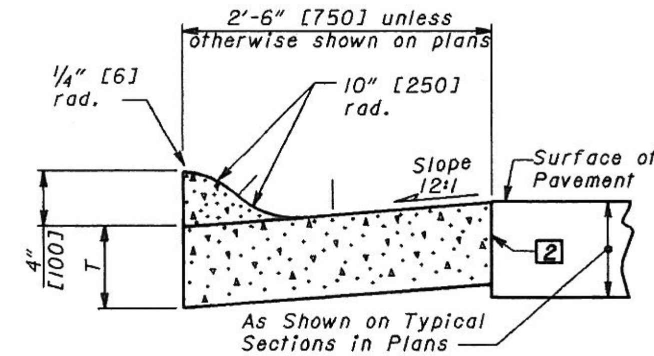
TYPE 2



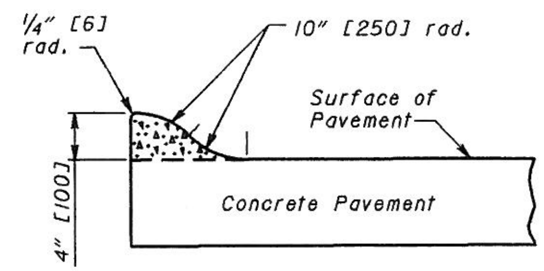
TYPE 2-A



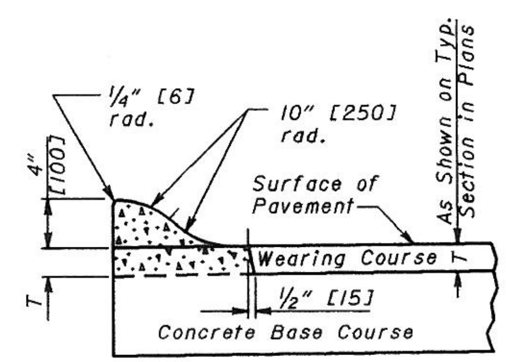
TYPE 2-B



TYPE 3



TYPE 3-A



TYPE 3-B

NOTES

GENERAL: This drawing shows alternate types of curb that may be used on various types of pavement. The typical section of the project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.

JOINTS: 1" [25] expansion joints shall extend up to the top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of at least 2" [50] above the flow line of the gutter. Dowel bars shall be used in the curb and gutter section at expansion joints and to the surface fo the pavement.
Transverse expansion joint material shall meet the requirements of Item 705.03.

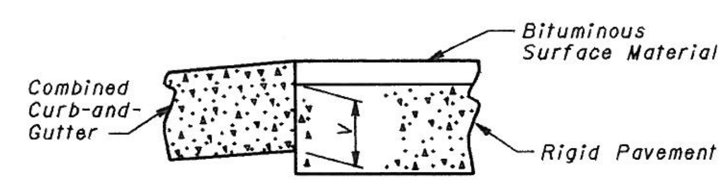
GUTTER PLATE THICKNESS: Thickness of gutter plate "T" shall be 9" [230] unless otherwise shown on the plans.

TOLERANCES: Dimensional tolerances are as follows:
Curbs: -1/32" to +1/4" [-1 to +5],
Gutters: 0 to +1/2" [0 to +12].

LEGEND

[1] Expansion joint material and joint sealer are not required for the portion of the curb that is adjacent to a flexible pavement type. Both materials are required, as detailed, for the full height of rigid pavement and concrete bases.

[2] Butt joints shall be provided between combined curb-and-gutter and new or existing rigid pavements, with tie bars or hook bolts provided at intervals of 5' [1.5 m]. See **SCD BP-2.1** for details of tie bars and hook bolts.
If the combined curb-and-gutter adjoins a new rigid base or an existing rigid base or pavement that is to be surfaced with bituminous material, a butt joint shall also be provided. However, tie bars or hook bolts shall be omitted when the vertical overlap ("V" in detail below) between the curb-and-gutter and rigid pavement is less than 7" [175].



THIS DRAWING REPLACES BP-5.1M DATED 10-28-94.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
7-28-00
DATE

REVISIONS

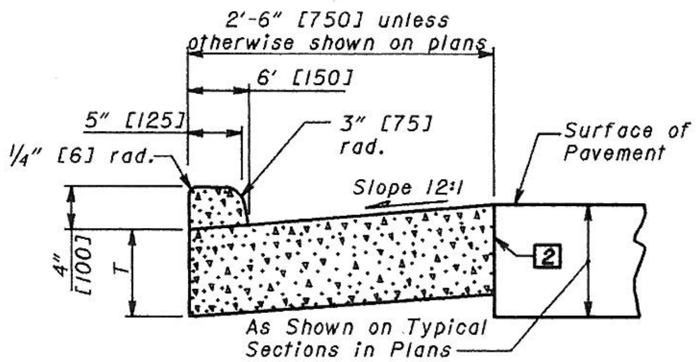
STDS. ENGR. M. Evans
DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

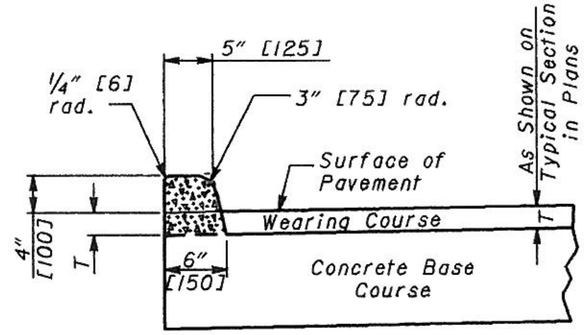
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
CONCRETE CURBS AND COMBINED CURB AND GUTTERS

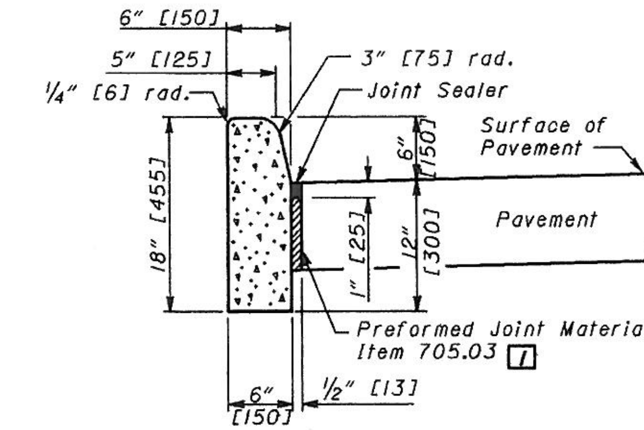
NUMBER BP-5.1



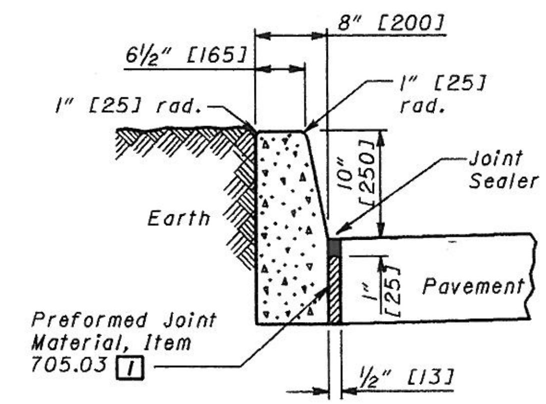
TYPE 4



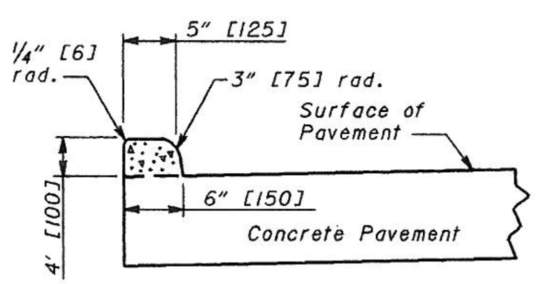
TYPE 4-B



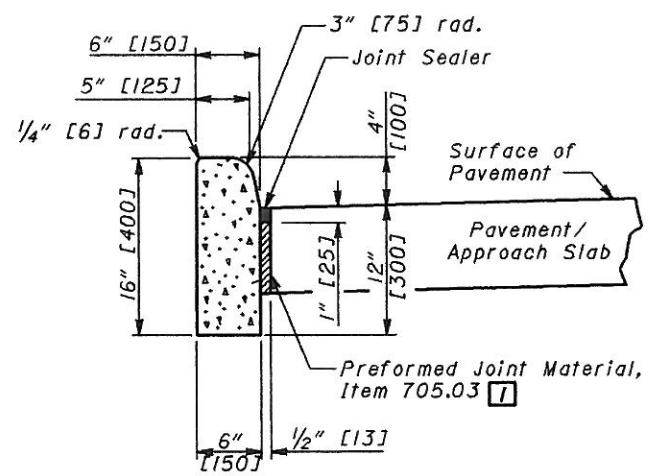
TYPE 6



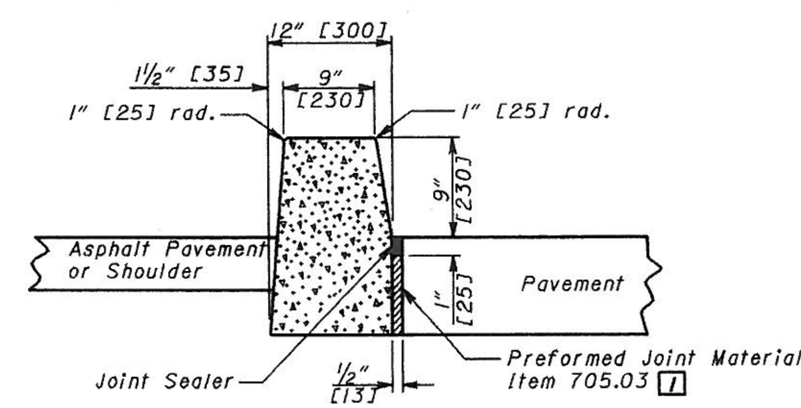
TYPE 7



TYPE 4-A



TYPE 4-C



TYPE 8

See Sheet 1 of 2 for Notes and Legend.

THIS DRAWING REPLACES BP-5.1M DATED 10-28-94.

OHIO DEPARTMENT OF TRANSPORTATION

-28-00

ROADWAY DESIGN ENGINEER DATE

REVISIONS

STDS. ENGR. M. Evans

DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

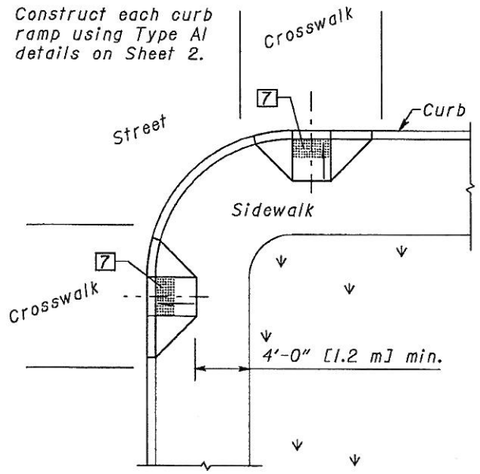
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING

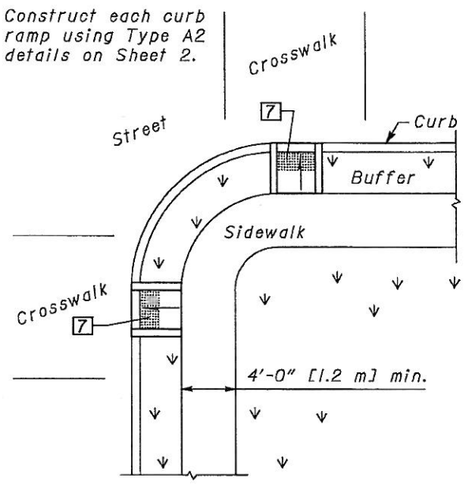
CONCRETE CURBS AND COMBINED CURB AND GUTTERS

NUMBER **BP-5.1**

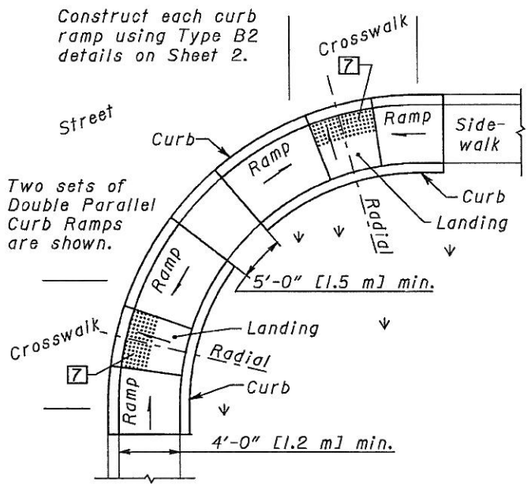
2/2



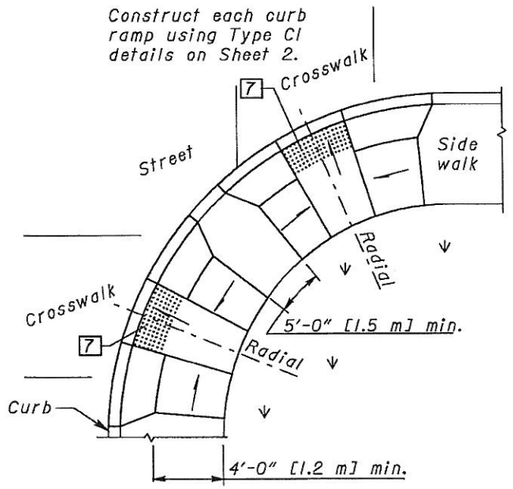
Use curb ramps with flared sides at locations with wide sidewalks.



Use curb ramps with returned curbs where buffer is wide enough to accommodate ramp slope.



Place on streets having wide turning radius and where sidewalks are narrow.



Curb ramp placement where streets have wide turning radius, and sufficient sidewalks width.

PERPENDICULAR CURB RAMPS

PARALLEL CURB RAMPS

COMBINATION CURB RAMPS

PREFERRED CONSTRUCTION PLACEMENT

CURB RAMP NOTES

GENERAL: This drawing shows curb ramp types details and placement examples for new curb ramp construction, including the installation of truncated domes. To retrofit existing curb ramps with truncated domes, see SCD BP-7.2.

Curb ramp types are shown on Sheet 2 and include Perpendicular, Parallel, and Combined types as specified to be constructed in the locations shown on the project plans. The contractor may adjust the placement of curb ramps if existing field conditions warrant, according to CONSTRUCTION PLACEMENT details (this sheet), and with the approval of the Engineer.

DETECTABLE WARNINGS: Install Truncated Domes on each curb ramp with approved materials, as shown on Sheet 3. Install these proprietary products as per manufacturer's written instructions.

DRAINAGE: Contractor is to ensure the base of each constructed curb ramp allows for proper drainage, without exceeding allowable cross slope or ramp slopes. Vertical change in level exceeding 1/8" [3] between the 1) pavement and gutter, and 2) gutter and ramp, are not allowed.

SURFACE TEXTURE: Texture of concrete surfaces by coarse brooming transverse to the ramp slopes and is to be rougher than the adjacent walk.

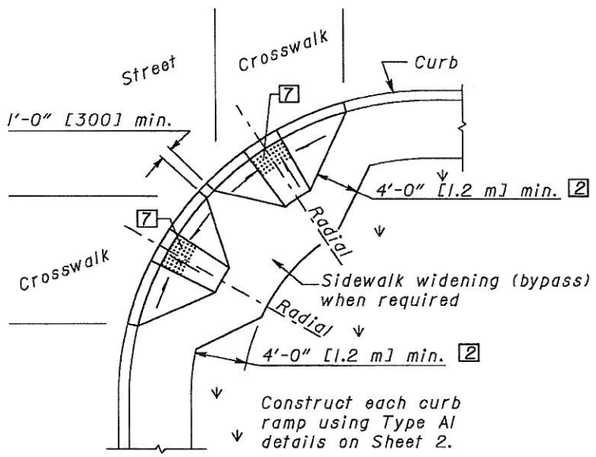
JOINTS: Provide expansion joints in the curb ramp as extensions of walk joints and consistent with Item 608.03 requirements for a new concrete walk. Provide a 1/2" [13] Item 705.03 expansion joint filler around the edge of ramps built in existing concrete walks. Lines shown on this drawing indicate the ramp edges and slope changes, and do not necessarily indicate joint lines.

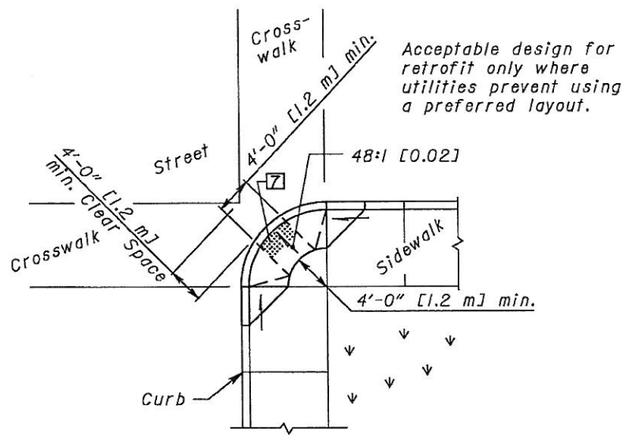
PAYMENT: Measure Walk and Curb, Items 608 and 609, through the curb ramp area paid for under their respective Items. Removal of existing curb, walk (or existing curb ramps) are paid under Item 202.

New curb ramps constructed in curb and walks are paid for under **Item 608 - Curb Ramp, Type ____** (A1, A2, B1, B2, C1, or C2), **Each** and includes the cost of any additional materials and installation (including truncated domes), grading, forming and finishing. Curb ramps constructed in existing curb and walk are paid under **Item 608 - Curb Ramp, Type____** (A1, A2, B1, B2, C1, C2, or D) **Square Foot [Meter]**, includes the cost of furnishing and installing all materials, (including truncated domes), grading, forming, and finishing of the curb and walk of the curb ramp.

For LEGEND, See Sheet 2.

Acceptable design on corners with wide turning radius where user is able to manuever within crosswalk limits so as not to encroach into adjacent vehicle lanes.





Use this design only for existing walks, and when site constraints prohibit other designs. The diagonal Type D ramp may be constructed as either a Perpendicular, Parallel or Combination curb ramp type. Avoid using where curb radii are less than 20'-0" [6.0 m]. Since these are unique designs, each occurance should be individually detailed on the project plans.

PERPENDICULAR RAMPS

DIAGONAL RAMP (Type D)

ACCEPTABLE CONSTRUCTION PLACEMENT

THIS DRAWING REPLACES BP-7.1 DATED 7-28-00.

OHIO DEPARTMENT OF TRANSPORTATION — DATE 1-19-07
Bill Graves — ROADWAY DESIGN ENGINEER

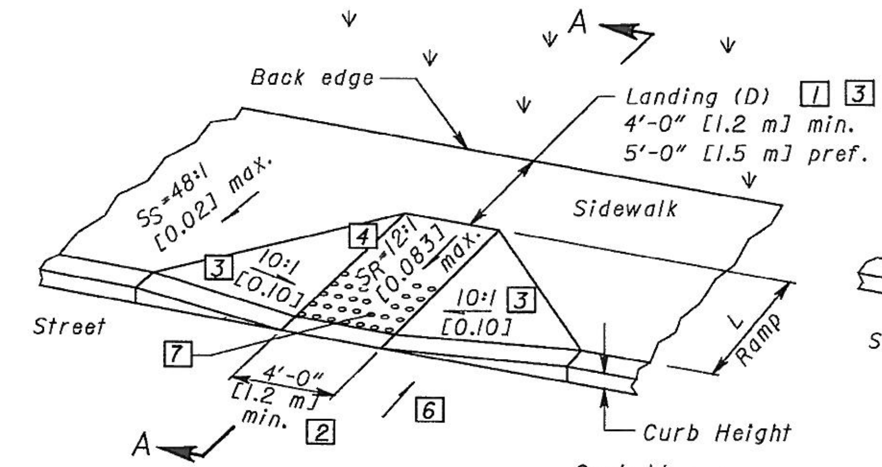
STDS. ENGR. D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

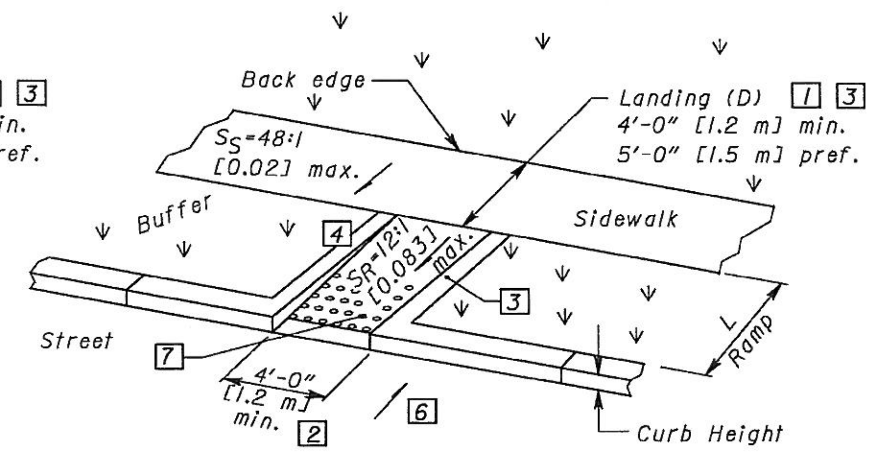
STANDARD ROADWAY CONSTRUCTION DRAWING
NEW CURB RAMPS
(with Truncated Domes)

NUMBER BP-7.1



$L = \frac{\text{Curb ht.}}{S_R - S_S}$ [5]

Type A1 (Perpendicular with flared sides)

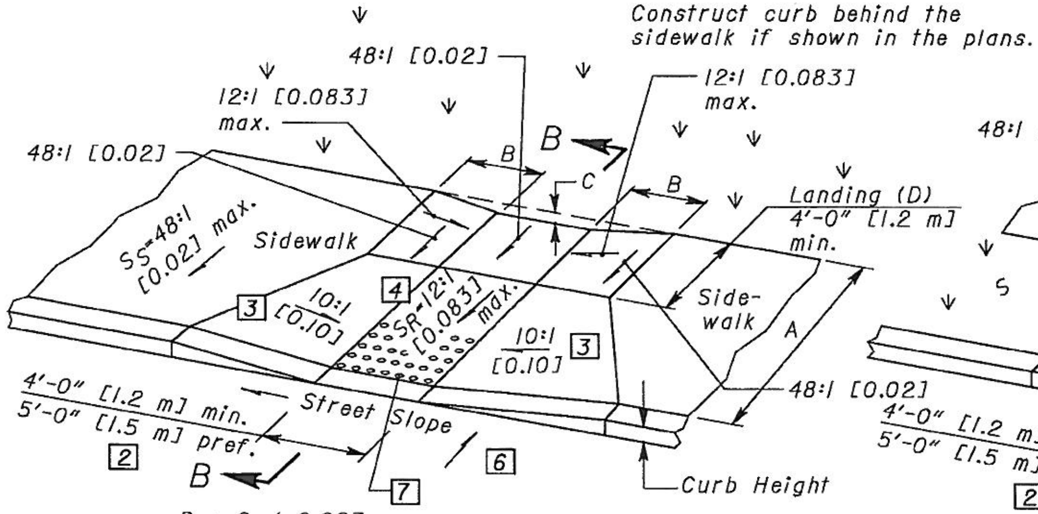


$L = \frac{\text{Curb ht.}}{S_R - S_S}$ [5]

Type A2 (Perpendicular with returned curb)

PERPENDICULAR CURB RAMP DETAILS

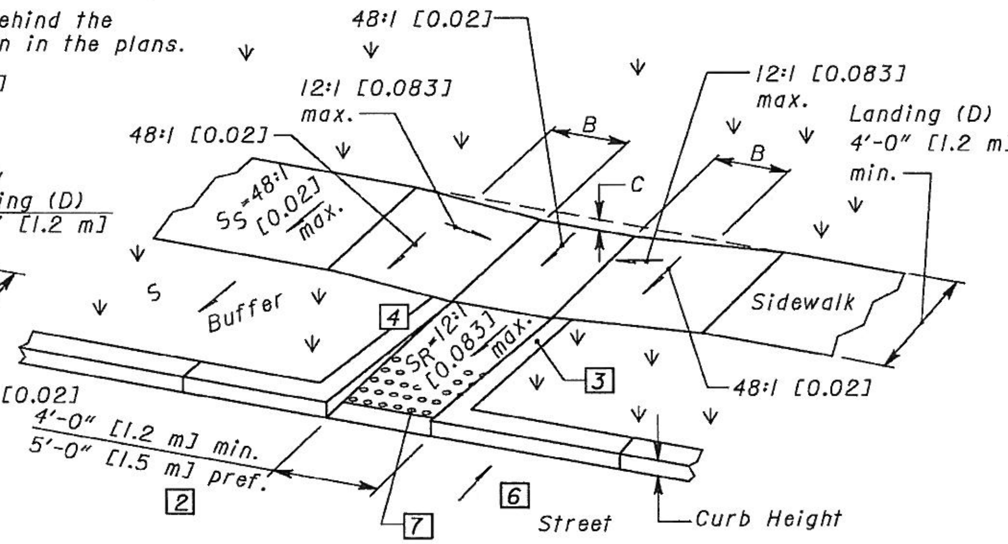
Construct curb behind the sidewalk if shown in the plans.



B = C / 0.083

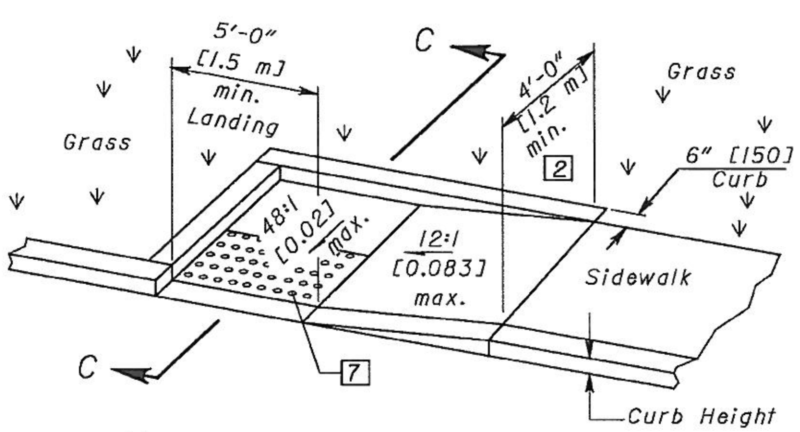
C = [Curb ht. + A(S_S)] - [(A-D)S_R + D(0.02)]

Type C1 (Combined with flared sides)



Type C2 (Combined with returned curb)

COMBINED CURB RAMP DETAILS



Type B1 (Single sided Parallel)

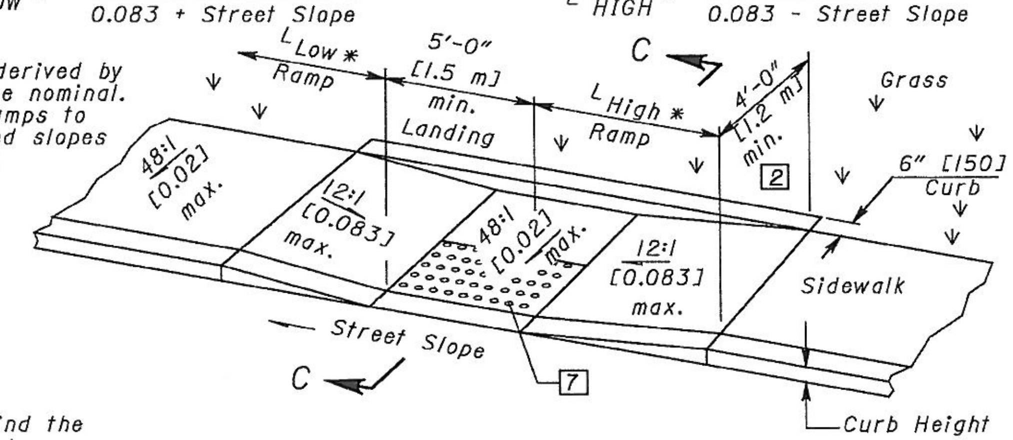
Street Slope	Ramp Length @ 1"/ft [0.083]	
	L_{LOW} SIDE*	L_{HIGH} SIDE*
0.01	5'-5" [1.6 m]	6'-10" [2.1 m]
0.02	4'-10" [1.5 m]	7'-11" [2.4 m]
0.03	4'-5" [1.3 m]	9'-5" [2.9 m]
0.04	4'-1" [1.2 m]	11'-8" [3.6 m]
0.05	3'-9" [1.1 m]	15'-2" [4.6 m]
* Measured along the back of a 6" [150] high curb.		

Dimensions derived by equations are nominal. Construct ramps to meet required slopes and existing conditions.

$L_{LOW} = \frac{\text{Curb height}}{0.083 + \text{Street Slope}}$

$L_{HIGH} = \frac{\text{Curb height}}{0.083 - \text{Street Slope}}$

* See Equations and Table to the left.



Type B2 (Double sided Parallel)

For Parallel Ramps construct curb behind the sidewalk if required elsewhere in the plans.

PARALLEL CURB RAMP DETAILS

LEGEND

[1] Dimension may be reduced to 3'-0" [915] in existing sidewalks if the landing is unconstrained along the back edge.

[2] May be reduced to 3'-4" [1.02 m] in existing sidewalks to better fit the walk configuration or where site conditions are restricted by narrow walks, pole foundations, drainage inlets, etc. The width may be tapered.

[3] Where landing width (D) has been reduced to 3'-0" [915] the flared sides shall have a maximum slope of 12:1 [0.083].

Flared sides are not required where the edges of a curb ramp are protected by landscaping or other barriers to travel by wheel chair users or pedestrians across the edge of the curb ramp. However, if the flared sides are used in these areas, they may be of any slope.

[4] The slope of the ramp toward the curb is preferred to be 12:1 [0.083] or flatter related to the horizontal.

In existing sidewalks, where the maximum ramp slope (S_R) is not feasible, it may be reduced as follows:

A) 10:1 [0.10] for a max. rise of 6" [150],
B) 8:1 [0.125] for a max. rise of 3" [75],
C) 6:1 [0.167] over a max. run of 2'-0" [610] for historic areas where a flatter slope is not feasible.

[5] The minimum length of a perpendicular ramp is 6' [2.0 m] from the back of a 6" [150] curb and may be increased where feasible to obtain a flatter ramp slope or to better blend with the walk configuration.

[6] Gutter counter slopes at the foot of perpendicular curb ramps should not exceed 20:1 [0.05] over a distance of 2'-0" [610] from the curb.

[7] Detectable Warnings (truncated domes) are to be installed in the location shown. Dimensions of the domes are 24" [610] from the back of the curb by the width of the ramp. See DETECTABLE WARNINGS NOTES on Sheet 3.

See Sheet 3 for Sections.

OHIO DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER

1-19-07
DATE

STDS. ENGR. D. Focke

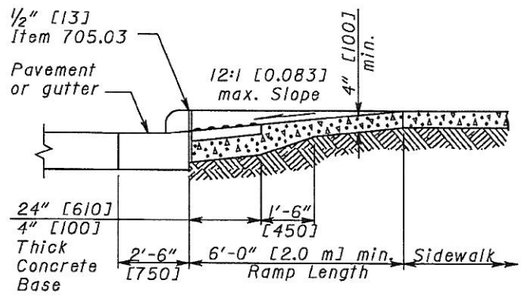
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
NEW CURB RAMPS
(with Truncated Domes)

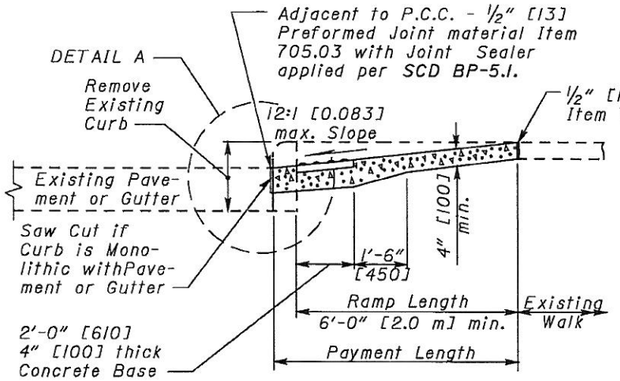
THIS DRAWING REPLACES BP-7.1 DATED 7-28-00.

NUMBER BP-7.1

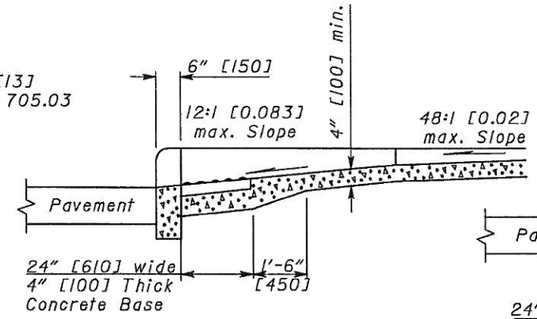


New gutter shown.

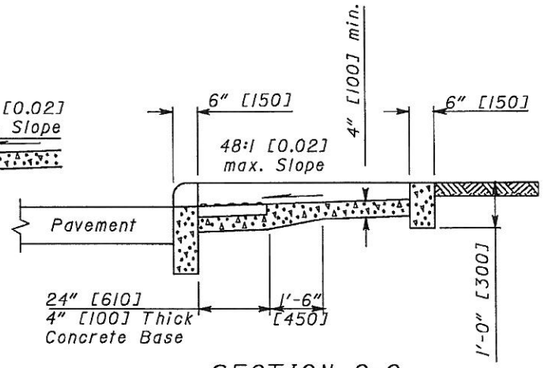
SECTION A-A
NORMAL DETAIL
See Sheet 2.



SECTION A-A
EXISTING WALK DETAIL
See Sheet 2.



SECTION B-B
See Sheet 2.



SECTION C-C
See Sheet 2.

DETECTABLE WARNINGS NOTES

PLACEMENT: *Truncated domes are to be installed at any location where pedestrians might cross paths with vehicular traffic lanes, such as the base of curb ramps or at blended curbs. A 24" [610] strip of domes is to be installed for the full width of the ramp. Typical street corner placement locations are shown on Sheet 1.*

Ramp cross sections underneath truncated domes are a 4" [100] thick concrete base. Ramp cross sectional details shown here depict nominal 2" [50] thick pavers. Increase base thickness to maintain the 4" [50] thickness if using deeper pavers. Do not decrease thickness for thinner products. See DETAIL A.

ALIGNMENT: *Truncated domes should be aligned with the primary direction of pedestrian travel as shown on the DOME ALIGNMENT Detail. Normally the domes should be flush with the back of the curb, but in skewed conditions can be up to 6" [150] to 8" [200] behind the curb, as shown on the DOME ALIGNMENT ON RADIUSED CURB Detail. For non-standard layouts, dome materials may have to be mitered and placed segmentally (see TREATMENT AT BLENDED CURBS Detail on SCD BP-7.2).*

VISUAL CONTRAST: *Color of the truncated domes should contrast with surrounding concrete walk and ramp. Use of a red blend is recommended for concrete curb ramps. Black is not an acceptable color.*

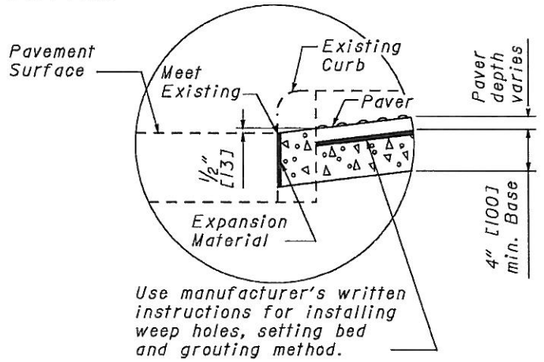
PRODUCTS: *Approved products include clay and concrete pavers, cast iron, and cast-in-place engineered plastics and a listing of them may be found on the Office of Roadway Engineering Service's Truncated Domes Approved List (at www.dot.state.oh.us/roadwayengineering/index.asp). Install products as per manufacturer's printed instructions, with added instructions for pavers shown below.*

If using pavers, setting bed and joints to be grouted in accordance with manufacturer's written instructions and provide written copies to the Engineer. If the installation method requires a grout bed, bonding group or other cementatious materials, provide documentation that the materials have freeze thaw resistance equal to the pavers.

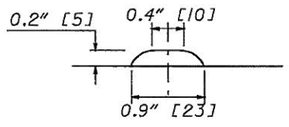
Mortared joints are to be flush with top surface and struck so as to give a smooth surface. Pavers shall be laid such that joints are level with adjoining joints to provide a smooth transition from brick to brick and brick to concrete surface.

The width of paver joints are to be between 5/32" [4] and 1/16" [1.5]. Pavers should not directly touch each other unless they have spacing bars.

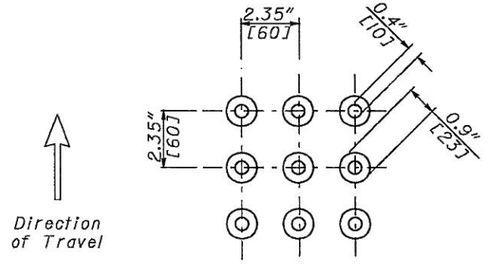
The surface of any two adjacent units should not differ by more than 1/8" [3] in height. Place pavers in a running bond pattern. Face of all pavers are to be clean of cement and protected to avoid chipping during installation.



DETAIL A

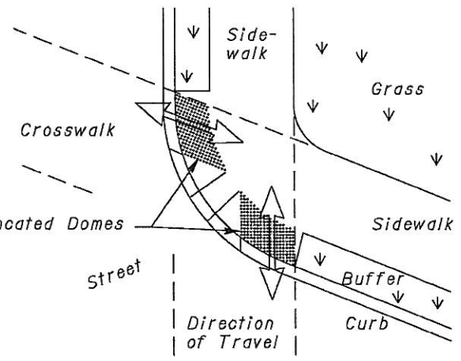


HEIGHT AND DIAMETER



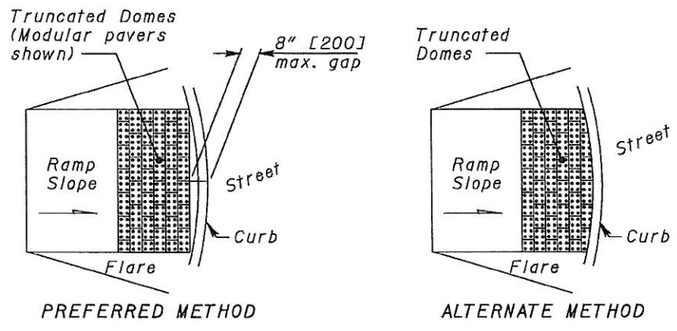
SQUARE PATTERN, PARALLEL ALIGNMENT

TRUNCATED DOMES DETAILS



Orient In-line domes alignment with primary direction of travel.

DOME ALIGNMENT



PREFERRED METHOD

ALTERNATE METHOD

Use Preferred Method for aligning truncated domes unless curb curvature would produce gap more than 8" [200] from front of curb to the domes. If gap will be greater than 8" [200] miter truncated dome product to match the back of the curb as shown in the Alternate Method. NOTE: Some approved Truncated Domes products are easier to miter than others.

DOME ALIGNMENT ON RADIUSED CURB

THIS DRAWING REPLACES BP-7.1 DATED 7-28-00.

OHIO DEPARTMENT OF TRANSPORTATION — 1-19-07 — DATE
ROADWAY DESIGN ENGINEER

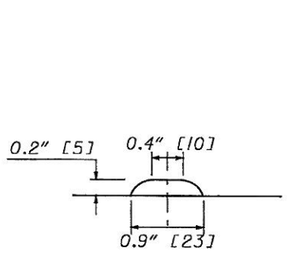
STDS. ENGR. D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

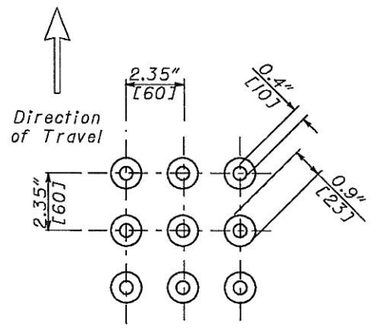
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
NEW CURB RAMPS
(with Truncated Domes)

NUMBER BP-7.1

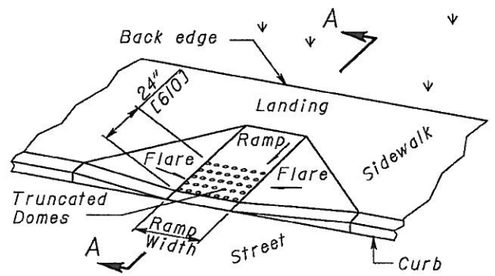


HEIGHT AND DIAMETER

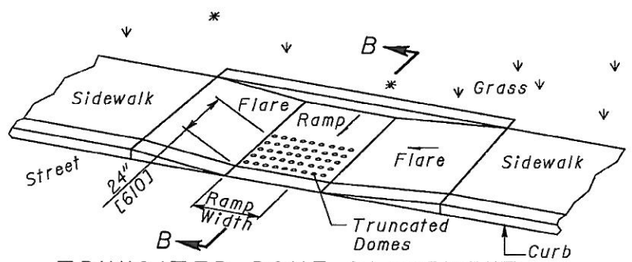


SQUARE PATTERN, PARALLEL ALIGNMENT

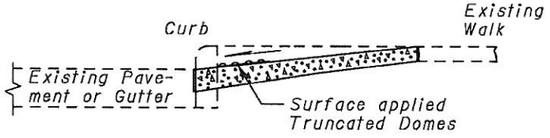
TRUNCATED DOMES DETAILS



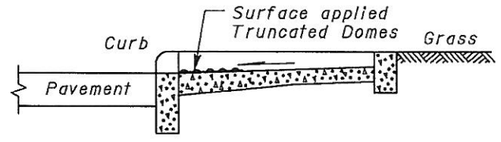
TRUNCATED DOME PLACEMENT ON PERPENDICULAR CURB RAMP



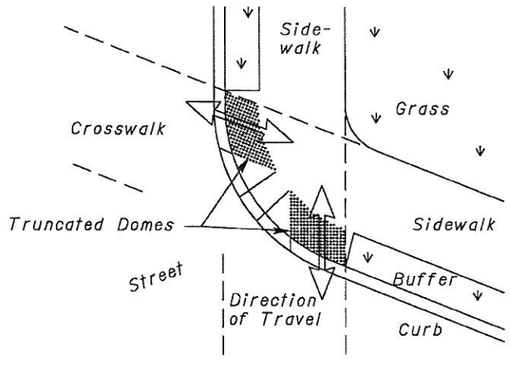
TRUNCATED DOME PLACEMENT ON PARALLEL CURB RAMP



SECTION A-A

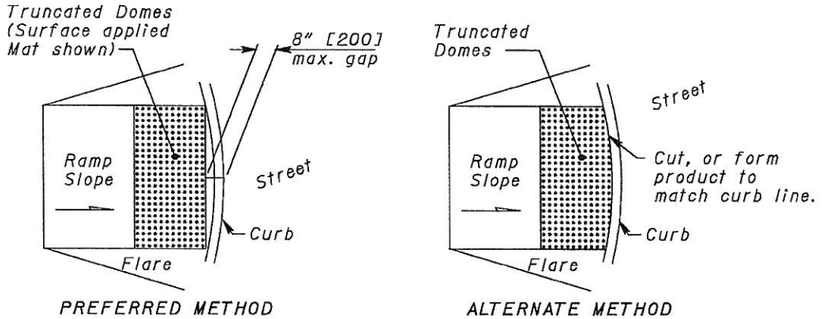


SECTION B-B



Orient In-line domes alignment with primary direction of travel.

DOME ALIGNMENT



PREFERRED METHOD

ALTERNATE METHOD

Use Preferred Method for aligning truncated domes unless curb curvature would produce gap more than 8" [200] from front of curb to the domes. If gap will be greater than 8" [200] miter truncated dome product to match the back of the curb as shown in the Alternate Method. NOTE: Some approved Truncated Domes products are easier to miter than others.

DOME ALIGNMENT ON RADIUSED CURB

NOTES

GENERAL: This drawing depicts the application of truncated domes on existing concrete curb ramps where the existing ramps are otherwise ADAAG compliant, and has sound concrete. For the installation of truncated domes with new curb ramps, see SCD BP-7.1.

DETECTABLE WARNINGS: Truncated domes are the only acceptable method for providing detectable warnings. Domes pattern and alignment should be as shown in TRUNCATED DOME DETAILS.

PLACEMENT: Truncated domes are to be installed at any location where pedestrians might cross paths with vehicular traffic lanes, such as the base of curb ramps or at blended curbs. A 24" [610] strip of domes is to be installed for the full width of the ramp. Typical placement locations for standard curb ramp types are shown below.

ALIGNMENT: Truncated domes should be aligned with the primary direction of pedestrian travel as shown on the DOME ALIGNMENT Detail. Normally the domes should be flush with the back of the curb, but in skewed conditions can be up to 8" [200] behind the curb, as shown on the DOME ALIGNMENT ON RADIUSED CURB Detail. For non-standard layouts, dome materials may have to be mitered and placed segmentally as shown on TREATMENT AT BLENDED CURBS Detail.

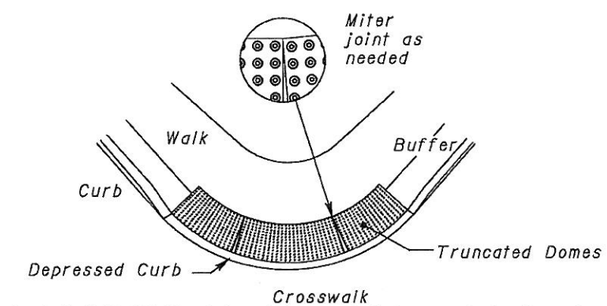
VISUAL CONTRAST: Color of the truncated domes should contrast with surrounding concrete walk and ramp. Use of a red blend is recommended for concrete curb ramps. Black is not an acceptable color.

EDGES: Truncated dome products used in conjunction with this drawing must be installed flush with the surrounding concrete walk/ramp surface. If the unbeveled edge lip of any product is greater than 1/4" [6] (or a beveled edge more than 1/2" [13]), then the domes have to be recessed into existing concrete. Sawcut existing concrete, chip and prepare surface according to manufacturer's instructions. Seal any cut edges as directed by the Engineer.

PRODUCTS: Only products on the Office of Roadway Engineering Service's Truncated Domes Approved List (www.dot.state.oh.us/roadwayengineering/standards/index.asp) are permitted to be used with this drawing. Such products must be installed according to the product's manufacturer. For surface applied products, this would include any mechanical fasteners and adhesives (including cure times).

PROHIBITED PRODUCTS: Stamped concrete methods or flexible mats are not currently allowed.

PAYMENT: All work needed to install a completed truncated dome retrofit is included in **Item 608 - Truncated Domes, Each.** This includes existing concrete preparation, products, adhesives/fasteners, installation and sealing as necessary to install product in accordance with manufacturer's instructions. Payment also includes all additonal costs of sawing and preparing concrete to install a recessed product, (pavers or cast-iron, and etc.) if used.



Install 24" [610] strip of truncated domes at border of a depressed corner to identify the transition between the sidewalk and the street. NOTE: Some products are difficult to align, and may need extensive mitering to maintain proper dome alignment. Some products are difficult to miter, other products should be installed in these situations. Cast Iron products are available in a few standard radiuses.

TREATMENT AT BLENDED CURBS

NEW DRAWING

OHIO DEPARTMENT OF TRANSPORTATION
Bob Brace
ROADWAY DESIGN ENGINEER
1-19-07
DATE

STDS. ENGR. D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

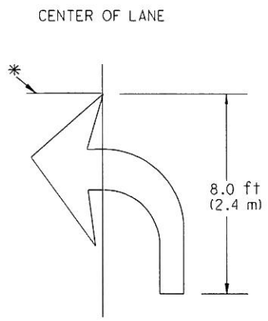
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
RETROFITTED CURB RAMPS
(with Truncated Domes)

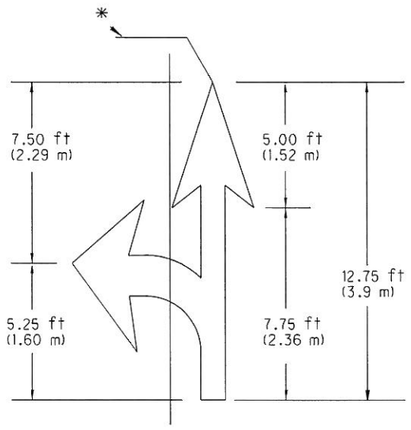
NUMBER BP-7.2

1 / 1

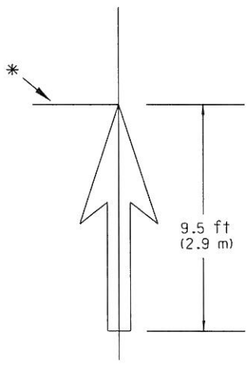
TYPICAL PLACEMENT



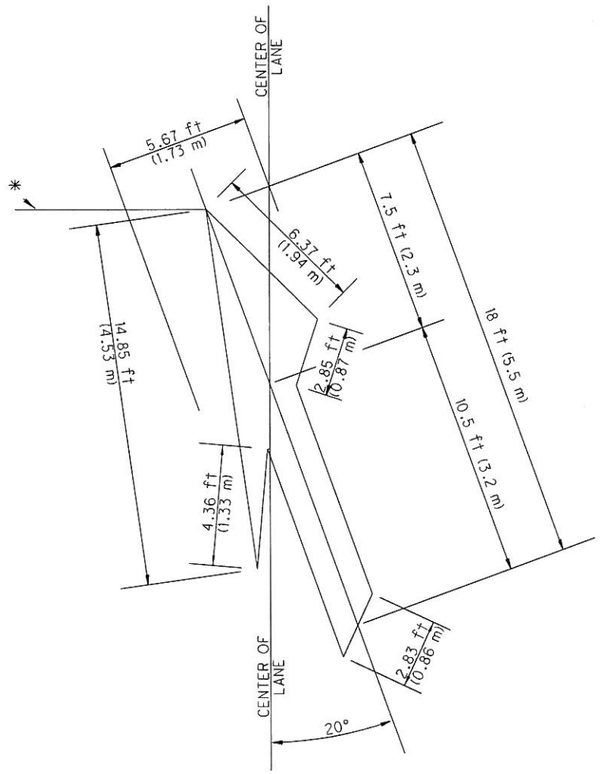
TURN ARROW
(RIGHT ARROW OPPOSITE)



TURN AND THROUGH ARROW
(THREE-HEADED DIRECTIONAL ARROWS CAN BE ACHIEVED BY THE COMBINATION OF TURN ARROWS.)



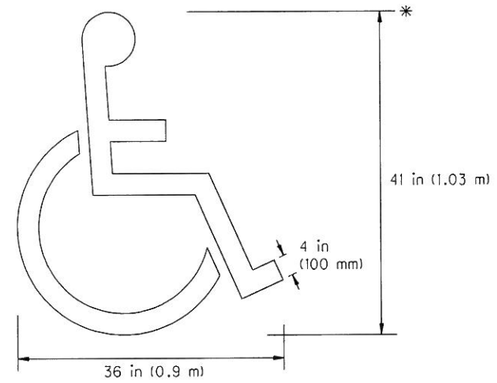
THROUGH ARROW



LANE-REDUCTION ARROW
(FOR LEFT LANE, USE MIRROR IMAGE)

TABLE 1

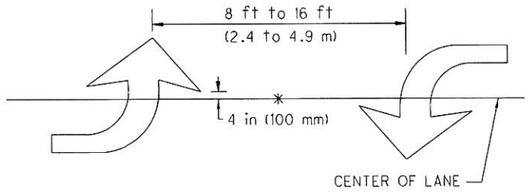
LANE-USE ARROW		
ARROW TYPE	SIZE ft (m)	AREA square ft (square m)
Turn Arrow	8.0 (2.4)	17 (1.6)
Through Arrow	9.5 (2.9)	13 (1.2)
Turn and Through Arrow	12.75 (3.9)	28 (2.6)
Lane-Reduction Arrow	18.0 (5.5)	46 (4.2)



HANDICAP SYMBOL MARKING

TABLE 2

HANDICAP SYMBOL		
HEIGHT in (m)	WIDTH in (m)	AREA square ft (square m)
41 (1.03)	36 (0.9)	2.7 (0.3)



TWO-WAY LEFT-TURN ARROWS
(SEE NOTE 6)

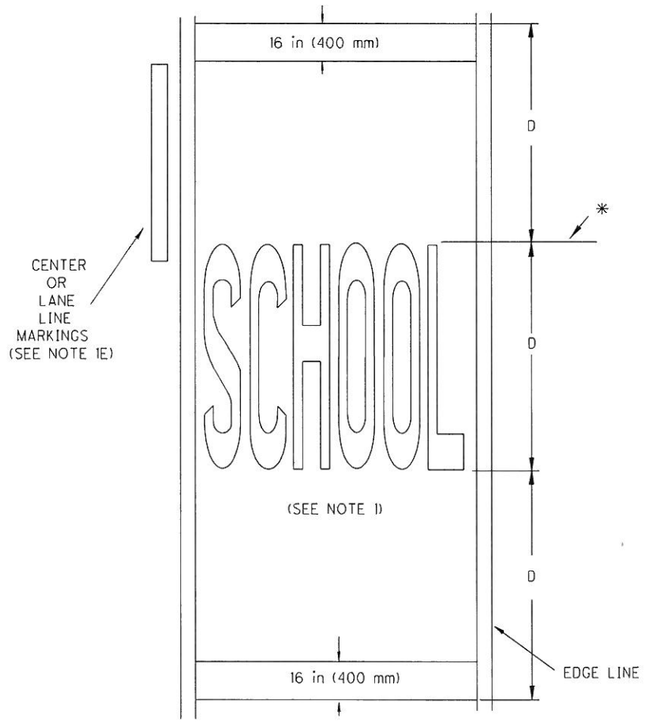
* - INDICATES STATION REFERENCE POINT

WORD AND SYMBOL PAVEMENT MARKINGS 1-15-10

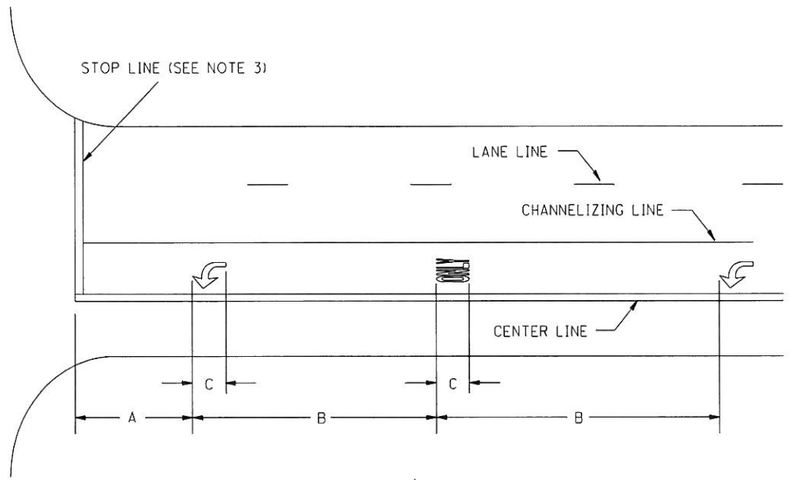
OFFICE OF TRAFFIC ENGINEERING

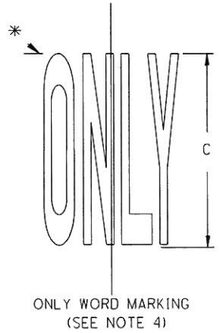
TC-71.10

SHB

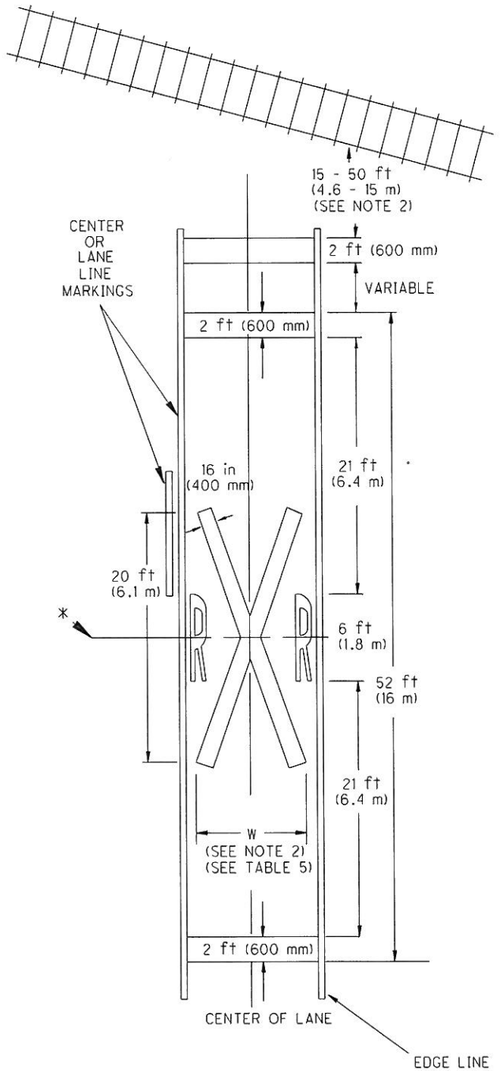


SCHOOL SYMBOL MARKING

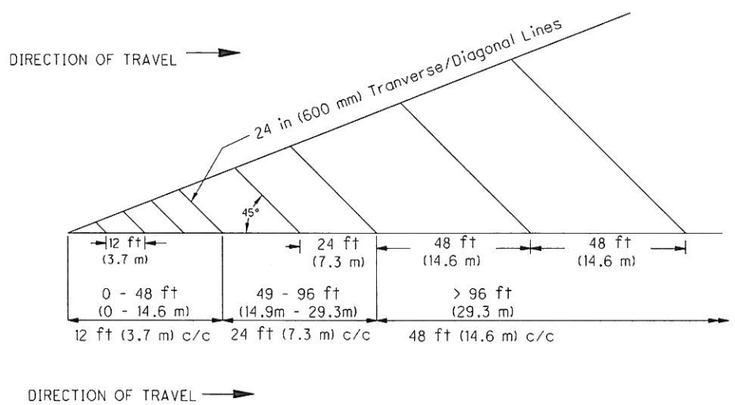




ONLY WORD MARKING
(SEE NOTE 4)



RAILROAD SYMBOL MARKING



TYPICAL ISLAND DETAIL TO SPACE TRANSVERSE/DIAGONAL LINES

TABLE 4

LANE USE MARKINGS			
ROADWAY TYPE	DIMENSIONS feet (m)		
	A (min.)	B	C
RURAL	30 (9)	88 (27)	8 (2.4)
URBAN	10 (3)	66 (20)	6 (1.8)

(SEE NOTE 5)

TABLE 3

WORDS square ft (square m)			
TYPE	HEIGHT		
	URBAN	RURAL	MULTI-LANE
	6 ft (1.8 m)	8 ft (2.4 m)	10 ft (3.0 m)
ONLY (C)	17 (1.6)	23 (2.1)	N/A
SCHOOL (D)	27 (2.5)	37 (3.4)	90 (8.4)

* - INDICATES STATION REFERENCE POINT

TABLE 5

R X R SYMBOL						
W, R X R	WIDTH (W)	8 ft (2.4 m)	9 ft (2.7 m)	10 ft (3.0 m)	11 ft (3.3 m)	12 ft (3.6 m)
	AREA square ft (square m)	67 (6.2)	68 (6.3)	70 (6.5)	71 (6.6)	72 (6.7)

1-15-10

WORD AND SYMBOL PAVEMENT MARKINGS

OFFICE OF TRAFFIC ENGINEERING

TC-71.10

SHB

GENERAL NOTES:

1. SCHOOL Marking

1A. The SCHOOL markings shall be installed on all paved approaches in advance of all School Zones.

1B. The SCHOOL markings should be placed at least 100 feet (30 meters) in advance of the School Zone. The preferred placement of the SCHOOL marking is adjacent to the School Zone Advance sign.

1C. On two-way, two-lane highways the following shall apply:
- 1) When the approach lane to the School Zone is 11 feet (3.3 meters) or more in width;
  - a) The SCHOOL word marking and transverse lines shall be contained in, and centered in, the lane.
  - b) The character height shall be 6 feet (1.8 meters) for urban areas and 8 feet (2.4 meters) for rural areas.
- 2) When the approach lane to the School Zone is less than 11 feet (3.3 meters) in width;
  - a) One installation of the SCHOOL word marking and transverse lines shall extend across both lanes of traffic
  - b) The characters shall be 10 feet (3.0 meters) in height.

1D. On multi-lane approaches the following shall apply:
- 1) When the approach lanes to the School Zone are 11 feet (3.3 meters) or more in width;
  - a) The SCHOOL word marking and transverse lines shall be contained in, and centered in, each lane.
  - b) The character height shall be 6 feet (1.8 meters) for urban areas and 8 feet (2.4 meters) for rural areas.
- 2) When the approach lanes to the School Zone are less than 11 feet (3.3 meters) in width;
  - a) One installation of the SCHOOL word marking shall extend to the width of two approach lanes.
  - b) Transverse lines shall extend across all approach lanes of traffic.
  - c) The characters shall be 10 feet (3.0 meters) in height.

1E. Center or lane lines shall not pass through the SCHOOL word marking.

1F. 6 foot (1.8 meter) and 8 foot (2.4 meter) high SCHOOL Symbol marking shall be marked with 4 inch (100 millilmeter) strokes.
10 foot (3.0 meter) high SCHOOL Symbol marking shall be marked with 8 inch (200 millimeter) strokes.

1G. The area of the transverse lines varies with the width of the pavement; therefore the area must be added to the value in Table 3, on Sheet 2 of 3.

2. Railroad Crossing Markings

2A. On multi-lane approaches, markings shall be as follows:
- a) The RXR symbol shall be placed in each approach lane.
- b) Transverse lines used with the railroad symbols shall extend across all approach lanes.

2B. The railroad symbol should be located so that the W10-1, Railroad Advance Warning sign, is within the two transverse boundary lines of the railroad symbol.

2C. The stop line shall be located for best sight distance between 15 to 50 feet (4.6 to 15 meters) of the near edge of the tracks.

2D. The stop line shall be approximately 8 feet (2.4 meters) from a gate (if present).

2E. Width (W) of the "X" will vary according to the lane width.

2F. The height of the "R" shall be set at 6 feet (1.8 meters).

2G. The area of the transverse lines and stop lines varies with the width of the pavement; therefore the area must be added to the value in Table 5 on Sheet 2 of 3.

3. Stop Line Marking

3A. Except as specified in notes 3B and 3C, the stop line should be placed as follows:
- a) The stop line should be placed where cross-corner vision is maximum.
- b) In no case shall the stop line be placed more than 30 feet (9 meters) or less than 4 feet (1.2 meters) from the nearest edge of the intersecting roadway.
- c) For normal intersections the maximum distance should be 10 feet (3 meters).

3B. If a marked crosswalk is present the stop line should be placed 4 feet (1.2 meters) in advance of, and parallel to, the nearest crosswalk line.

3C. For signalized intersections the stop line should be placed at a minimum distance of 40 feet (12.2 meters) from the nearest signal head.

4. ONLY Word Marking

4A. The ONLY word marking is optional.

4B. Where used, the spacing between ONLY and arrow markings should be based on Table 4, as shown on Sheet 2 of 3.

4C. When lane-use arrow markings are used and the ONLY marking is not, an additional lane-use arrow should be used in its place to retain the spacing, as shown in Table 4 on Sheet 2 of 3.

5. Lane-use Arrow Markings

5A. Lane-use arrow markings are optional except where a through traffic lane(s) approaching an intersection becomes a mandatory turn lane(s).

5B. Where used, the spacing between markings should be based on Table 4, as shown on Sheet 2 of 3. However, based on the turn lane length, the spacing between the markings may be adjusted.

6. Two-Way Left-Turn Only Arrows (TWLTO)

6A. Arrow sets should be longitudinally spaced at intervals of:
- 1) 500 to 1000 feet (150 to 300 meters) for speeds less than or equal to 40 mph (65 km/hr)
- 2) 1000 to 1500 feet (300 to 450 meters) for speeds over 40 mph (65 km/hr)

6B. In addition, an arrow set should be placed
- 1) 100 to 200 feet (30 to 60 meters) from the near edge of an intersecting roadway
  or
- 2) Inside both ends of TWLTO lanes

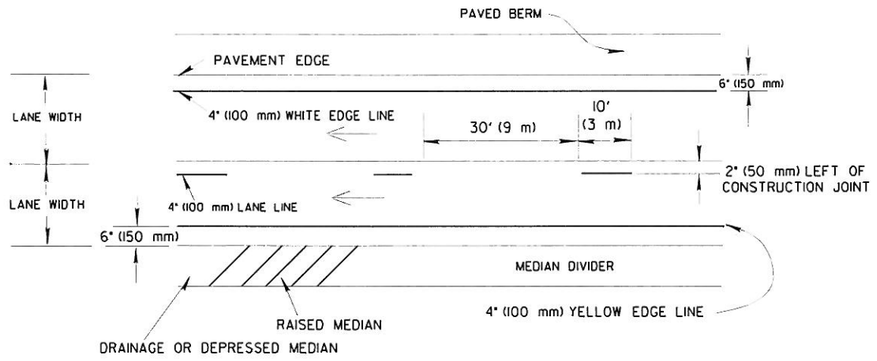
1-15-10

WORD AND SYMBOL PAVEMENT MARKINGS

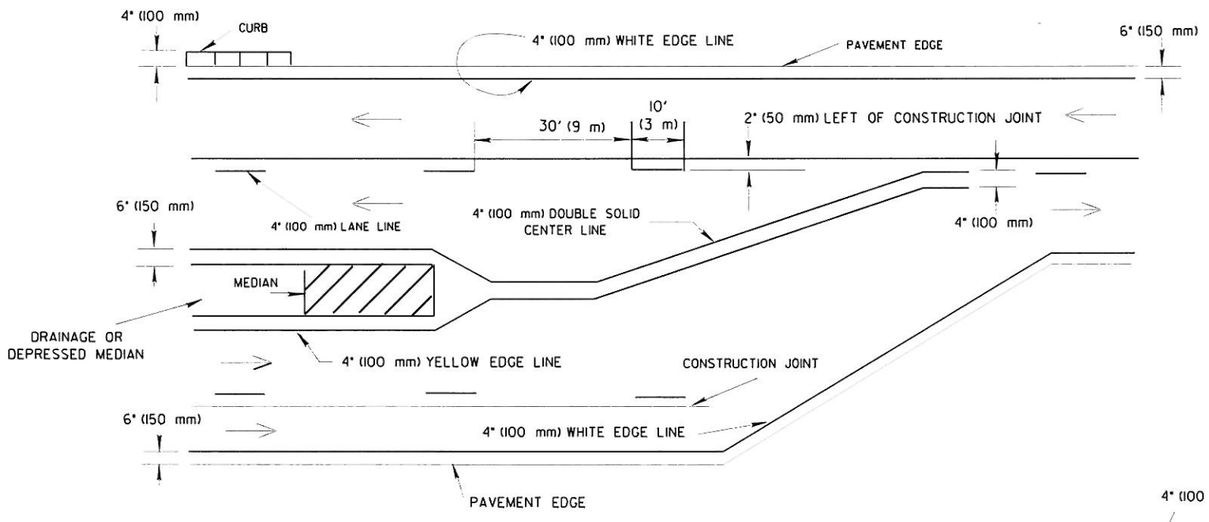
OFFICE OF TRAFFIC ENGINEERING

TC-71.10

SHB



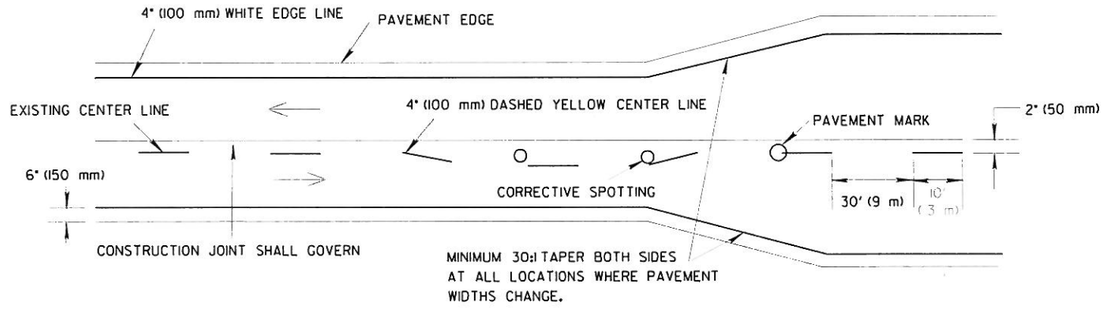
FREEWAY & EXPRESSWAY MAINLINE MARKINGS



MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS

NOTES

1. The distance from the pavement edge to the nearside edge of the edge line may be increased with the approval of the Engineer in order to maintain uniform lane width.
2. See TC-72.20 for entrance and exit ramp markings.
3. The cycle length for dashed lines shall be 40' (12 m) plus or minus 6" (150 mm) The minimum length of dash shall be sufficiently long to maintain a 3:1 ratio between length of gap and length of dash.
4. Edge Line transitions shall be marked at the same time as the adjoining Edge Lines.



TWO LANE MARKINGS

01-19-01

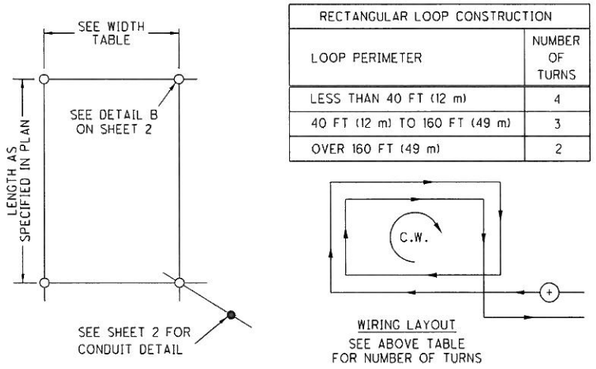
PAVEMENT MARKING DETAILS

OFFICE OF TRAFFIC ENGINEERING

TC-73.10

1 / 1

JAM



RECTANGULAR LOOP CONSTRUCTION	
LOOP PERIMETER	NUMBER OF TURNS
LESS THAN 40 FT (12 m)	4
40 FT (12 m) TO 160 FT (49 m)	3
OVER 160 FT (49 m)	2

RECTANGULAR DETECTOR LOOP DETAILS

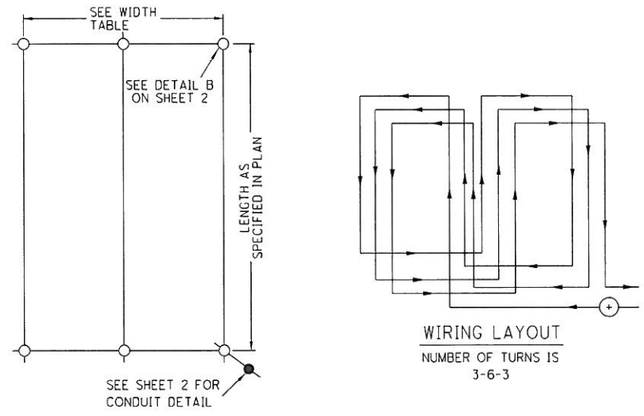
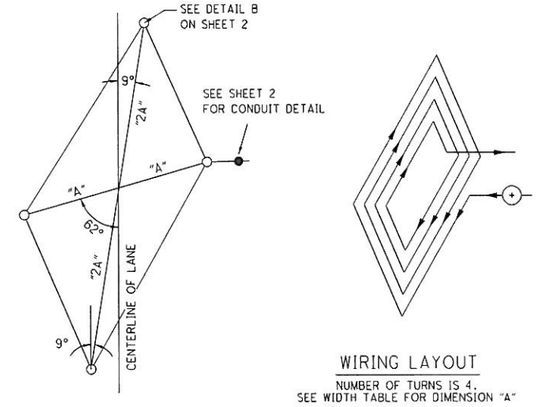
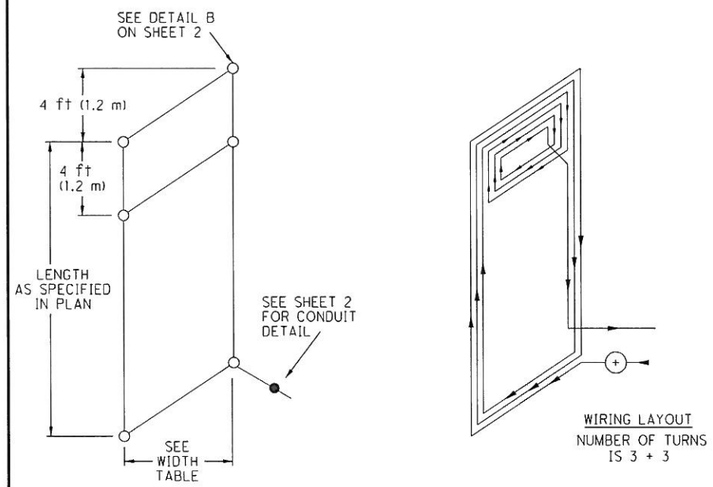


FIGURE 8 (QUADRUPOLE) LOOP DETAILS

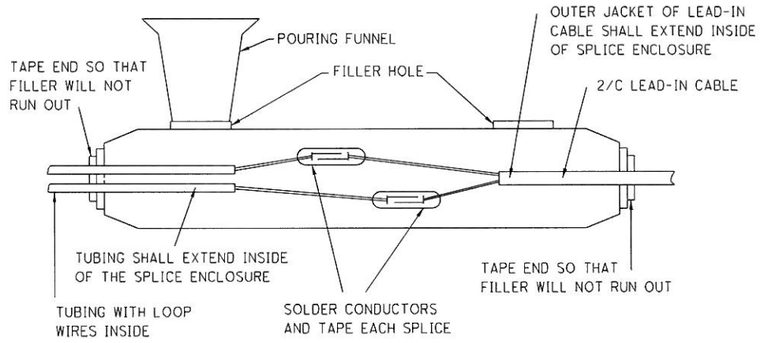


ANGULAR DESIGN DETECTION LOOP DETAIL

WIDTH TABLE			
LANE WIDTH	RECTANGULAR AND POWERHEAD	QUADRUPOLE	ANGULAR DESIGN
11 FT (3.35 m) AND LARGER	6 FT (1.83 m) WIDTH	6 FT (1.83 m) WIDTH	A= 4.5 FT (1.37 m)
LESS THAN 11 FT (3.35 m)	5 FT (1.52 m) WIDTH	6 FT (1.83 m) WIDTH	A= 4.0 FT (1.22 m)

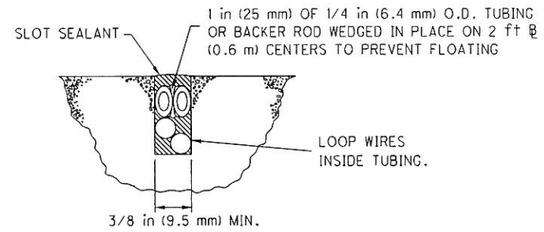


POWERHEAD DETECTOR LOOP DETAILS



1. LOOP DETECTORS WIRE TO LEAD-IN CABLE SPLICES WITHIN THE ENCAPSULATED SPLICE ENCLOSURE SHALL BE SOLDERED.
2. IF A PULLBOX IN NOT SPECIFIED IN THE PLANS. THE WATERPROOF SPLICE ENCLOSURE SHALL BE LOCATED IN THE FIRST ENTERED POLE OR PEDESTAL, EXCEPT IF THE CONTROLLER CABINET IN MOUNTED ON THAT POLE OR PEDESTAL, IN WHICH CASE THE LOOP WIRES SHALL BE ROUTED DIRECTLY INTO THE CABINET.
3. VISABLE AIR BUBBLES (VOIDS) OF 1/4 in (16 mm)

SPLICE ENCLOSURE DETAIL



1. MINIMUM SAW SLOT DEPTH: ASPHALT 4 in (100 mm)
   CONCRETE 2 in (50mm)
   MAXIMUM SAW SLOT DEPTH: CONCRETE 2.5 in (64 mm)
2. LOOP DETECTOR WIRE IN TUBING SHALL BE AS SPECIFIED IN CMS TABLE 732.19-1
3. LOOP DETECTOR SEALANT SHALL BE A PREQUALIFIED PRODUCT IN ACCORDANCE WITH SUPPLEMENT 1048.
4. SAW SLOTS AND PROBE HOLES SHALL BE THOROUGHLY CLEANED AND DRIED PRIOR TO INSTALLATION OF SEALANT.
5. WIRE INSTALLATIONS IN NEW ASPHALT MAY BE SAWED AND EMBEDDED WITH SEALANT IN A SUB-SURFACE COURSE WITH SUBSEQUENT COVERING BY THE SURFACE COURSE, SUBJECT TO APPROVAL OF THE ENGINEER.

SLOT DETAIL

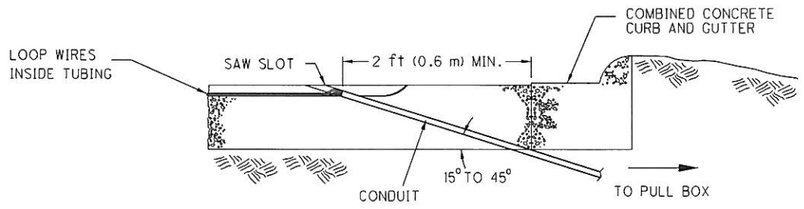
10-16-09

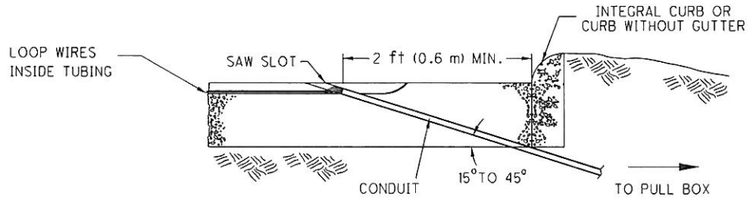
VEHICLE DETECTOR INSTALLATION DETAILS

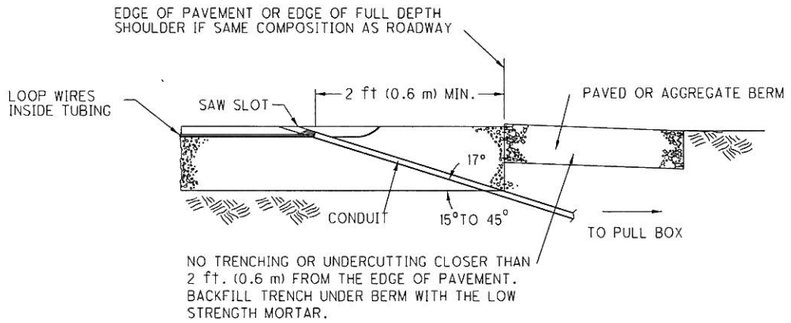
OFFICE OF TRAFFIC ENGINEERING

TC-82.10

JAM/KRS

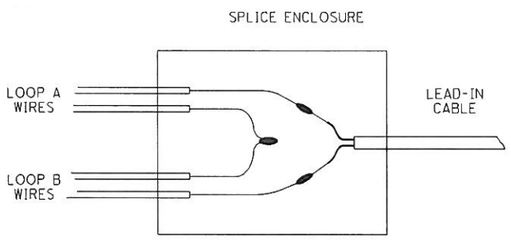






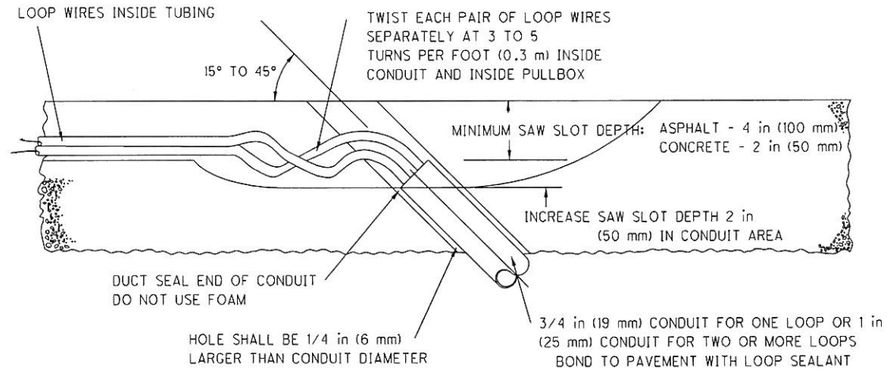
1. THE DRILLED HOLE SHALL BE LOCATED AS SHOWN ABOVE AND WITHIN THE FULL DEPTH PAVEMENT. IT SHALL NOT BE DRILLED OR CUT THROUGH THE PAVED BERM, CURB OR CURB AND GUTTER SECTION.
2. IN AREAS OF POOR PAVEMENT CONDITION, THE SAW SLOT DEPTH SHALL BE INCREASED TO INSURE ADEQUATE WIRE EMBEDMENT. ALL FIELD ADJUSTMENTS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

TYPICAL DRILLED HOLE LOCATIONS

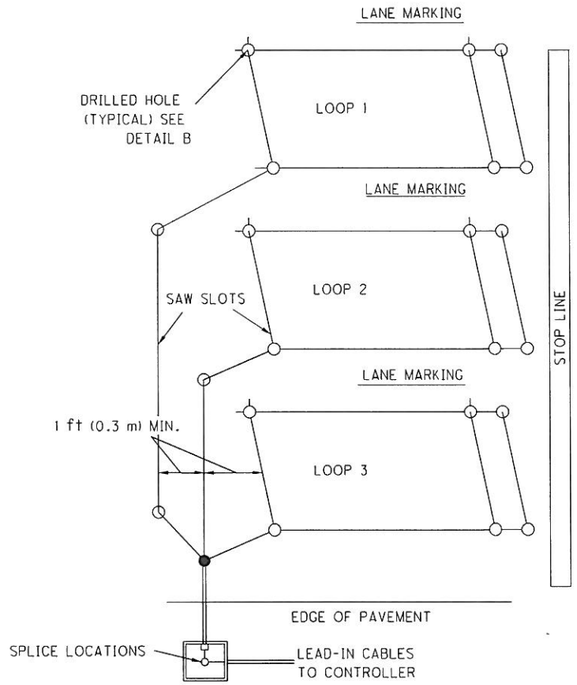


1. WHERE MULTIPLE LOOPS USE A SINGLE LEAD-IN CABLE, SERIES CONNECTIONS SHALL BE USED.
2. A MAXIMUM OF 2 LOOPS (3 WIRE SPLICES) SHALL BE USED IN ANY ENCAPSULATED SPLICE KIT.

SERIES CONNECTIONS

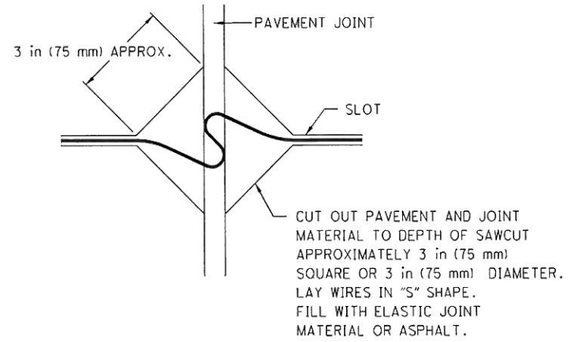


CONDUIT DRILLED HOLE DETAIL

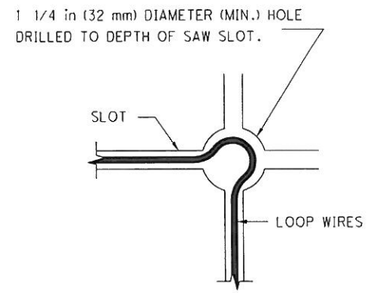


1. ONLY ONE SET OF LOOP WIRES SHALL BE RUN IN A SAW SLOT OVER TO THE CONDUIT HOLE LOCATION.
2. ALL ADJACENT SAW SLOTS SHALL HAVE A MINIMUM DISTANCE OF 1 ft (0.3 m) BETWEEN THEM. NO SAW SLOT SHALL BE LOCATED WITHIN 1 ft (0.3 m) OF A LONGITUDINAL OR TRANSVERSE JOINT IN P.C.C. PAVEMENTS IF THE SLOT IS PARALLEL TO THE JOINT.
3. STOP LINE DETECTOR LOOPS SHALL EACH BE ON A SEPERATE DETECTOR UNIT CHANNEL TO ENHANCE MOTORCYCLE DETECTION.

MULTIPLE LOOP LAYOUT



JOINT CROSSING DETAIL IN P.C.C. PAVEMENTS



DETAIL B

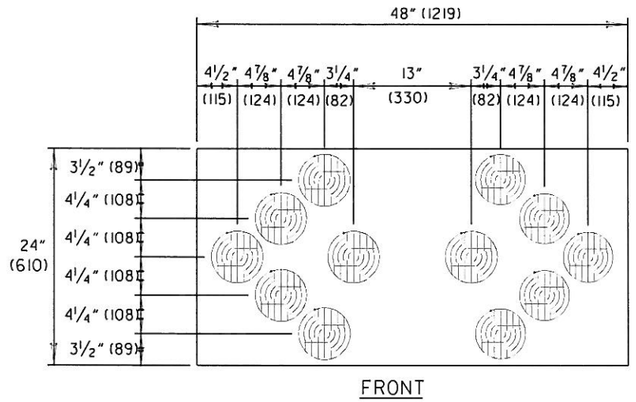
10-16-09

VEHICLE DETECTOR INSTALLATION DETAILS

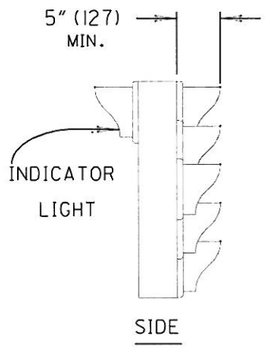
OFFICE OF TRAFFIC ENGINEERING

TC-82.10

JAM/KRS

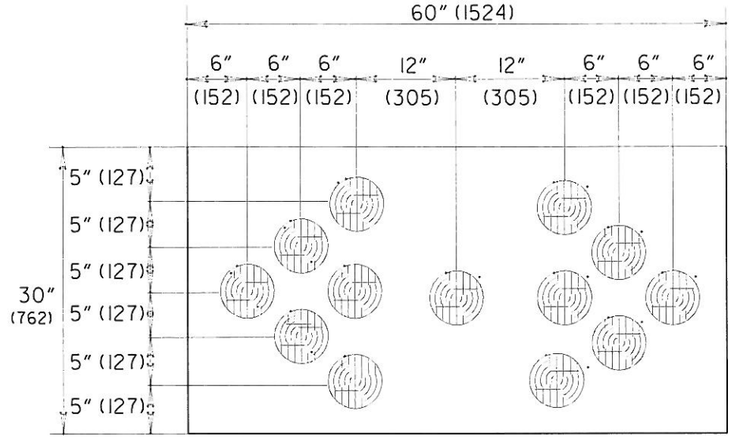


FRONT

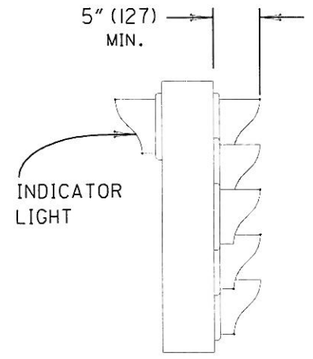


SIDE

TYPE A PANEL

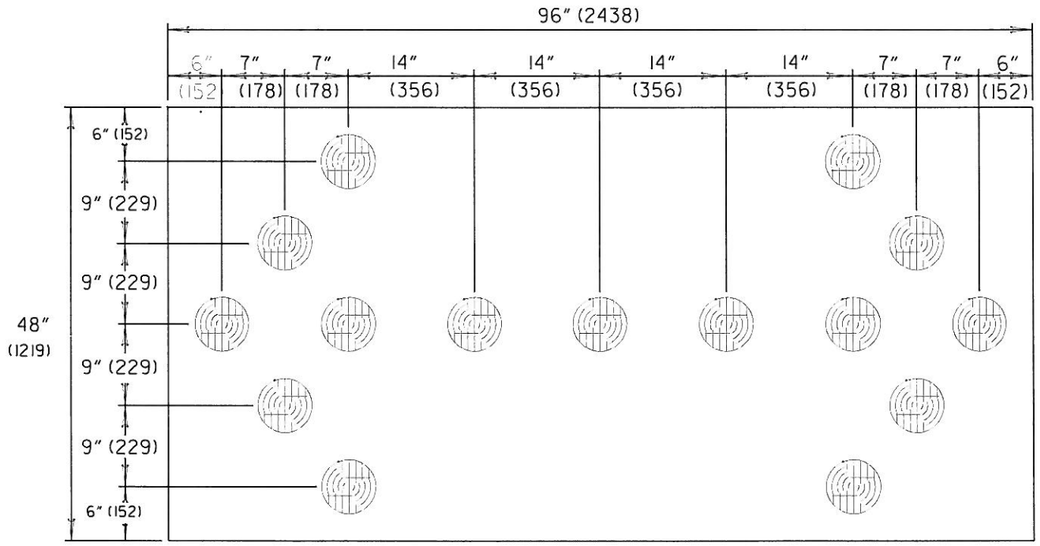


FRONT

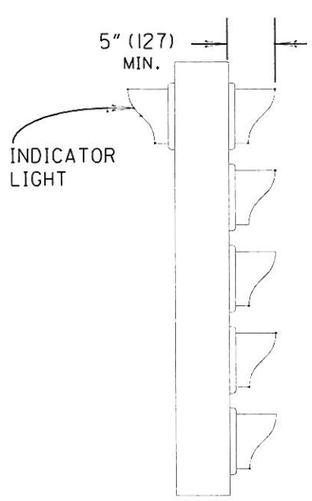


SIDE

TYPE B PANEL



FRONT



SIDE

TYPE C PANEL

ALL DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.

4-20-01

FLASHING ARROW PANEL

OFFICE OF TRAFFIC ENGINEERING

MT-35.10

FLASHING ARROW PANEL

The flashing arrow panel shall consist of the following components:

A. flasher panel

B. lamps

C. controls

D. power supply

E. mounting

A. Flasher panel

The flasher panel shall be of exterior type plywood or corrosion resistant metal construction of adequate design and strength. The panel finish shall be flat black.

A flasher panel shall be one of three sizes. The type A panel shall be a nominal 24" (610 mm) high by 48" (1219 mm) wide. Type B shall be a nominal 30" (762 mm) high by 60" (1524 mm) wide. Type C shall be a nominal 48" (1219 mm) high by 96" (2438 mm) wide.

Flashing arrow panels shall normally utilize high output (4412A and 4415A) lamps powered by an engine driven generator when permitted by the plans. The contractor may also furnish units powered by a solar array and batteries or only batteries. However, these units shall not be used where the approaching traffic would be on a horizontal curve in excess of 3 degrees. These units shall not be used if the approaching traffic, closer tha 1 mile (1.6 km) [1/2 mile (.8 km) where speed limits are less than 40 MPH], is more than 5½ degrees horizontally or 2 degrees vertically from the central axis of the lens units.

B. Lamps

For engine powered generator units, lamps shall be ANSI Number 4412a (PAR 46) for type B and C and 4415a (PAR 36) for type A. The lamp shall be fitted with an upper hood of not less than 180° at least 5" (127 mm) long. Arrow panels may use a lower power (wattage) lamp than the standard arrow panels. The lamps shall be approximately 5" (127 mm) diameter with a parabolic reflector. The lamp shall provide improved light distribution control by means of high quality reflectors and refractors. The light output from each lamp of the arrow shall not be less than shown in figure 1 when operating at full daytime brightness.

The lamps shall be securely mounted and positioned in the panel perpendicular to the panel face and oriented so that the lamp location lug (on back of the lamp) is on the horizontal center line through the lens. The lug will be on the right side of the lamp as viewed from the front.

The lamps shall be wired in circuits that can be switched to display any one of the folowing messages: left arrow, right arrow, left and right, and caution bar. A minimum of three indicator lights shall be placed on the back of the panel to indicate which message mode is in operation.

Each panel shall contain the following number of lamps as a minimum: type A-12 lamps, type B-13 lamps, type C-15 lamps.

CANDLE POWER CHART

				100					4°
		100	150	200	150	100			2°
100	150	200	250	350	250	200	150	100	0° HORIZONTAL
		100	150	200	150	100			- 2°
				100					- 4°
10°	7.5°	5°	2.5°	0°	2.5°	5°	7.5°	10°	
LEFT				CENTER				RIGHT	

(1) Measurements expressed in candela.
(2) Color of output light shall be yellow to light yellow.

Figure 1

C. Controls

Each flashing arrow panel shall contain a flasher control and a dimmer control unit housed in a cabinet which can be locked.

1. Flasher control

The flash rate for the sign panel shall be 25 to 40 flashes per minute. The flasher shall not cause electromagnetic interference. The lamps shall have a minimum "on time" of 50% and a maximum of 66%.

2. Dimmer control

Lamp intensity shall be variable by means of a photoelectrically controlled circuit which shall reduce lamp output during low ambient light conditions. Lamp intensity shall be at the nighttime level whenever the ambient illumination is in or below the range 2 foot-candle (21 lux) to 5 foot-candle (54 lux) and shall be at daytime level when ambient illumination is in or above the range 5 foot-candle (54 lux) to 10 foot-candle 108 (lux). If controls provide for continuous adjustment of lamp intensity with respect to ambient illumination, then lamp intensity shall increase linearly from nighttime intensity at 5 foot-candle (54 lux) to daytime intensity at 3250 foot-candle (35,000 lux). A time delay shall be built into the control to prevent false operation due to light flashes. The photoelectric control shall contain a switch which shall override the photoelectric control.

D. Power supply

The flashing arrow panel shall operate from power sources capable of continuously furnishing the proper voltage to the lamps a minimum of 24 hours without attendance.

D. Cont.

Motor generators, if used shall be of modern design to provide low emission of pollutants and shall be properly muffled. The motor generator shall be enclosed in a mesh enclosure which can be locked. The fuel tank shall have a cap which can be locked. Motor generators supplying power to a flashing arrow sign shall not be used to supply power to other equipment. Gasoline fueled engines shall not be used.

Battery and solar/battery units shall have a no-charge-life of not less than 15 days. No-charge-life is the number of consecutive days that the system can continue to function (double arrow mode, normal dimming during 12 hour night, full output during 12 hour day) starting with a full battery charge and with no additional charge being provided by the solar cells. The no-charge-life may be based upon calculations providing that manufacturer's ratings and efficiency calculations are furnished for each major component.

E. Mounting

The flashing arrow panel may be trailer or vehicle mounted or mounted on a rigid supporting device suitable for maintaining it in the designated position. Each of the mounting methods shall be suitably stable such as to prevent movement due to high winds or passage of large vehicles.

When a trailer is used, construction shall be such as to transport the flashing arrow panel and appurtances adequately and legally as well as support them properly during operation. The trailer shall be equipped with devices which shall provide leveling and stability during operation.

Minimum arrow panel mounting height shall be 7 feet (2.1 m) above the pavement surface (measured to the bottom of the panel).

Use and operation

The flashing arrow panel shall be located as shown in the maintainence of traffic drawings or as directed by the Engineer and operated continuously during traffic maintained periods. The Contractor shall supply all fuel, lubricants and parts necessary to obtain continuous operation and shall provide all service. The Contractor shall inspect the operation of the unit daily, including weekends and holidays. The Contractor shall arrange with the Engineer, an acceptable method of obtaining service for a malfunctioning panel within 30 minutes of a reported malfunction. Lamp intensity shall be adjusted to provide minimum legibility distances of ½mile (.8 km) type A, ¾ mile (1.21 km) type B and 1 mile (1.6 km) type C.

Type C panels shall be used for stationary operations on high speed 55 MPH or greater, high volume roadways. Type B shall be used for stationary operations on intermediate speed 40-50 MPH facilities, and type A on low speed 20-35 MPH facilities.

In addition, type B panels shall be used for moving operations on freeways and expressways and type A for moving operations on other facilities.

Battery and solar/battery units shall be fully charged when first set up. They shall have gauges to indicate approximate battery charge remaining. The Contractor shall verify daily that the unit is operating satisfactorily and the remaining battery charge is sufficient for at least 2 more days.

Flashing arrow panels are not to be used on two lane-two way roadways.

When left unattended the control cabinet, motor generator enclosure and fuel tank shall be locked.

Type A and type B panels used in moving operations may be powered by the vehicle's electrical system but shall not be left unattended when so powered.

When not in use, the flashing arrow panel shall be stored at a location which will not be hazardous to traffic or pedestrians.

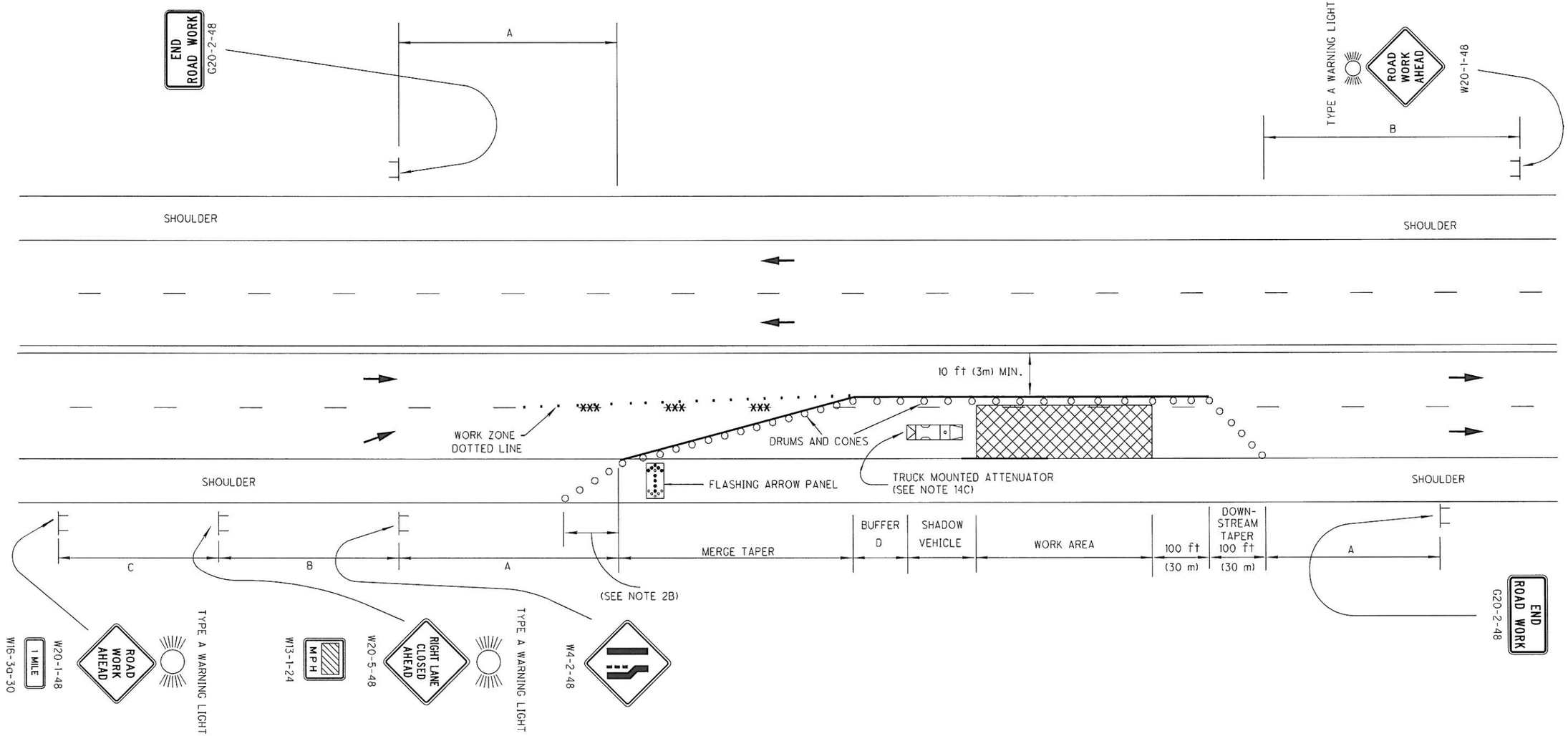
The panels shall be designed for operation in 100% humidity and temperatures from -20 to + 130 degrees Fahrenheit (-29 to + 54 degrees Celsius).

CLOSING RIGHT LANE OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS

07-17-09

OFFICE OF TRAFFIC ENGINEERING

MT-95.31



LEGEND

DRUMS	○ ○ ○ ○ ○ ○ ○
REMOVE EXISTING MARKINGS	XXXXXXX
DIRECTION OF TRAVEL	→

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS FT(m)		
	A	B	C
MAJOR CONVENTIONAL	500 (150)	500 (150)	500 (150)
FREEWAY & EXPRESSWAY	1000 (300)	1500 (450)	2640 (800)

TABLE II

SPEED LIMIT (MPH)	MERGING TAPER RATE MINIMUM	SHOULDER TAPER RATE MINIMUM	MAXIMUM DRUM SPACING FT (m)		BUFFER (D) FT (m) MINIMUM
			Taper sec.	Tangent sec.	
25	11:1	4:1	25 (7.5)	40 (12)	155 (45)
30	15:1	5:1	30 (9)	40 (12)	200 (60)
35	21:1	7:1	35 (10.5)	40 (12)	250 (75)
40	27:1	9:1	40 (12)	80 (24)	305 (95)
45	45:1	15:1	45 (13.5)	80 (24)	360 (110)
50	50:1	17:1	50 (15)	80 (24)	425 (130)
55	55:1	18:1	55 (16.5)	80 (24)	495 (150)

SHB/LAM

GENERAL NOTES:

DESIGN SPEED

1. The design speed used for taper rates should typically be the permanent legal speed. However, on construction projects for which the speed limit is reduced, the reduced speed may be used in determining the taper rate when the taper is not the first active construction area within the project.

TAPERS

2A. The minimum acceptable length for the merge taper shall be determined by multiplying the width of offset by the merge taper rate. The merge taper rate is provided in Table II.

2B. The minimum acceptable length for the shoulder taper shall be determined by multiplying the width of the shoulder by the shouldertaper rate. The shoulder taper rate is provided in Table II.

SIGN SPACING

3A. The work zone sign spacings shown in Table I are minimums. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200 feet (60 meters) for speeds of 45 mph or less and a minimum of 400 feet (120 meters) for speeds 50 mph or greater.

ADJUSTMENTS FOR SIGHT DISTANCE

4. The location of the merging taper and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

5A. ROAD WORK AHEAD (W20-1) signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK (G20-2) signs are only required for lane closures of more than 1 day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any W20-1 or G20-2 sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

6A. The Advisory Speed plaque W13-1 shall be used when specified in the plan.

6B. When the approach speed limit is 40 mph or less 36-inch (900-millimeter) warning signs may be used.

6C. The Distance plaque W16-3a (or W16-2a if the distance shown is in feet) shall indicate the distance to the beginning of the merging taper. Distances less than 1 mile may be expressed in feet. The plaque may be omitted if Extra Advance Sign Groups are not used.

6D. Provide signing on the inactive side of the highway, as shown, when specified in the plans.

EXTRA ADVANCE WARNING SIGNING

7. Extra Advance Warning Sign Groups consisting of ROAD WORK AHEAD (W20-1), LANE CLOSED AHEAD (W20-5) and WATCH FOR STOPPED TRAFFIC (W3-H7) signs plus Distance plaques may be specified in the plans or may be required to be erected, as determined by the the Engineer (see Standard Construction Drawing MT-95.50).

PAVEMENT MARKING/RPMs

8A. If the construction operation requires a lane closure for more than 1 day, then the existing conflicting reflectors shall be removed from the raised pavement markers (RPMs).

8B. Additionally, if a lane closure of greater than 3 days is required, then the following shall be performed:

- a) The appropriate color work zone edge lines shall be applied along the taper.
- b) The existing conflicting pavement markings shall be removed or covered as per CMS 614.11G.
- c) Work Zone Dotted Lines, 3 feet (0.9 meters) in length separated by 9 foot (2.7 meter) gaps, shall be provided to identify the merge.

8C. Work zone edge lines shall be provided along the tangent section when specificed in the plans.

8D. Work zone pavement markings which would conflict with the final traffic lanes shall be removable tape (CMS 740.06 Type I) unless the area will be resurfaced prior to project completion.

8E. After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 614.111. The original markings and raised pavement marker reflectors shall be restored at no additional cost unless separately itemized in the plans.

EQUIPMENT/MATERIALS STORAGE

9A. No equipment or material shall be located within the taper or buffer zone.

9B. When no work is being performed, all material and equipment shall be stored per CMS 614.03.

FLASHING ARROW PANEL

10. The flashing arrow panel shall be chosen from the ODOT approved list available on the ODOT web site.
Click on the Alphabetical List of choices and select TestLab/Materials Management. Then click on Approved List. Then click on Flashing Arrow Panel located near the bottom of the screen.

FLASHING WARNING LIGHTS

11. Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) signs and on the LANE CLOSED AHEAD (W20-5) signs are required whenever a night lane closure is necessary.

INTERSECTION/DRIVEWAY ACCESS

12. Within the length of the closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The contractor shall:

- a) Place across the closed lane, either 3 drums (cones) or barricades; and/or
- b) Provide an additional flagger at every public street intersection and major driveway.

Drums (cones) placed across the closed lane shall be located 25 feet (7.5 meters) beyond the projected pavement edges of the driveway or cross highway, as shown in Standard Construction Drawing MT-97.11. For barricades, see Standard Construction Drawing MT-101.60.

Existing STOP signs shall be relocated as necessary to assure proper location for the traffic conditions.

The method of control shall be subject to the approval of the Engineer.

DRUMS/CONES

13A. The maximum drum spacing along tapers and along tangent sections shall be as shown in Table II. A minimum of 5 drums shall be used to close the upstream shoulder.

13B. Cones may be substituted for drums as follows:

- a) Use of cones is permissible for either daytime operation or for nighttime operation, but shall not be used continuously, day and night. Upon completion of work within the work period, the cones shall be removed. They may again be placed on the highway in order to resume work in the following such work period.
- b) Cones used for daytime traffic control shall have a minimum height of 28 inches (0.7 meters).
- c) Cones used for nighttime traffic control shall have a minimum height of 42 inches (1.1 meters).
- d) Use of cones at night shall be prohibited along tapers.
- e) Cone spacing at night shall be at a maximum of 40 feet (12 meters).
- f) Where cones are substituted for drums along tangents, intermixing of channelizing devices within the same run will not be permitted. Either cones shall be used for the entire length of the tangent section, or drums shall be used for the entire length.

13C. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

SHADOW VEHICLE

14A. The shadow vehicle shall be in place and unoccupied whenever workers are in the work area. This vehicle shall be removed from the pavement whenever workers are not in the work area.

14B. The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe light(s).

14C. The vehicle shall be equipped with a truck-mounted attenuator (TMA) when specified in the plans.

MINIMUM LANE WIDTH

15. If the required minimum width for the open lane cannot be provided, the adjacent opposing lane shall be closed.

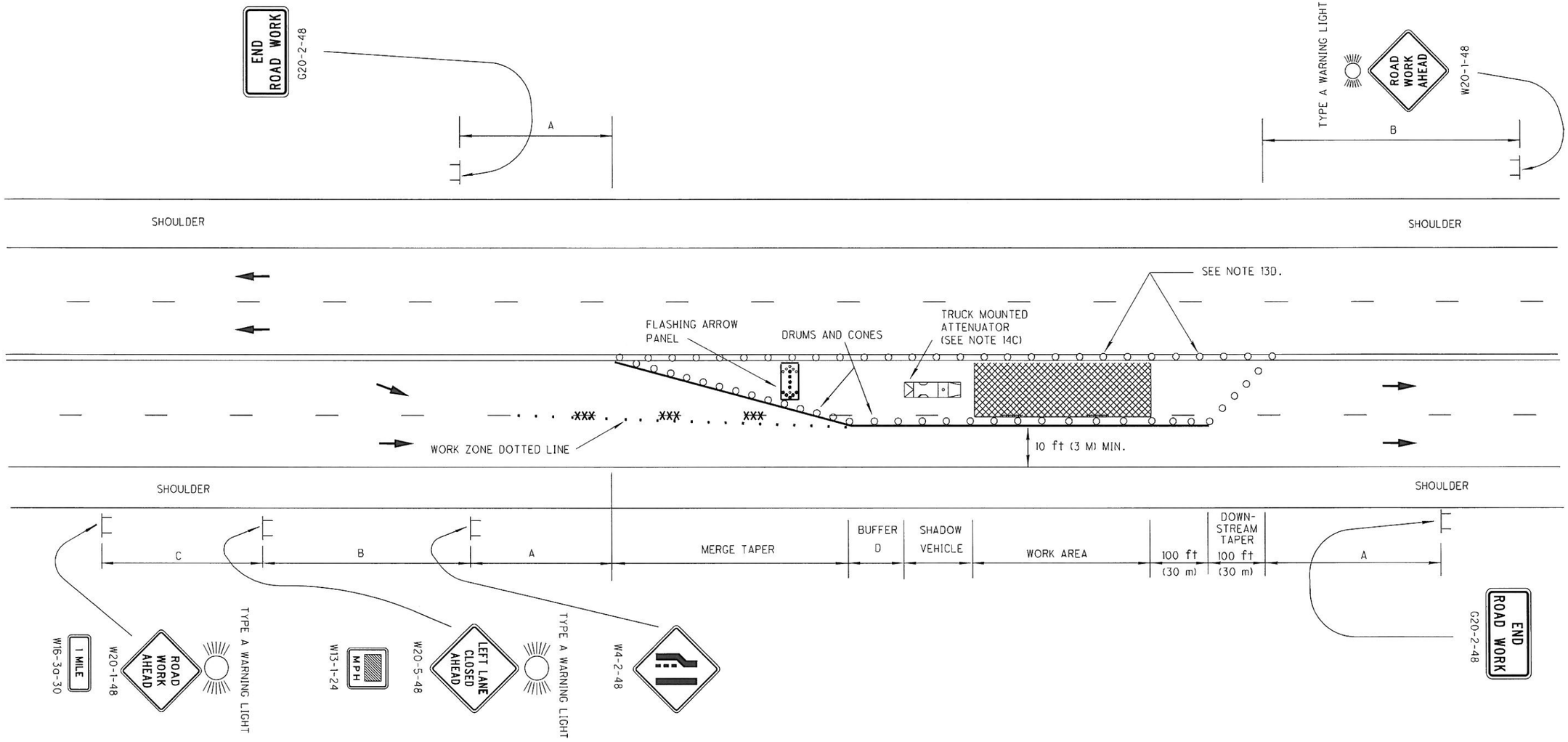
CLOSING RIGHT LANE OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS

07-17-09

OFFICE OF TRAFFIC ENGINEERING

MT-95.31

SHB/LAM



LEGEND

DRUMS	○ ○ ○ ○ ○ ○
REMOVE EXISTING MARKINGS	XXXXXXX
DIRECTION OF TRAVEL	→

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS FT(m)		
	A	B	C
MAJOR CONVENTIONAL	500 (150)	500 (150)	500 (150)
FREEWAY & EXPRESSWAY	1000 (300)	1500 (450)	2640 (800)

TABLE II

SPEED LIMIT (MPH)	MERGING TAPER RATE MINIMUM	SHOULDER TAPER RATE MINIMUM	MAXIMUM DRUM SPACING FT (m)		BUFFER (D) FT (m) MINIMUM
			Taper sec.	Tangent sec.	
25	11:1	4:1	25 (7.5)	40 (12)	155 (45)
30	15:1	5:1	30 (9)	40 (12)	200 (60)
35	21:1	7:1	35 (10.5)	40 (12)	250 (75)
40	27:1	9:1	40 (12)	80 (24)	305 (95)
45	45:1	15:1	45 (13.5)	80 (24)	360 (110)
50	50:1	17:1	50 (15)	80 (24)	425 (130)
55	55:1	18:1	55 (16.5)	80 (24)	495 (150)

CLOSING LEFT LANE OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS

07-17-09

OFFICE OF TRAFFIC ENGINEERING

MT-95.32

SHB/LAM

GENERAL NOTES:

DESIGN SPEED

1. The design speed used for taper rates should typically be the permanent legal speed. However, on construction projects for which the speed limit is reduced, the reduced speed may be used in determining the taper rate when the taper is not the first active construction area within the project.

TAPERS

2A. The minimum acceptable length for the merge taper shall be determined by multiplying the width of offset by the merge taper rate. The merge taper rate is provided in Table II.

2B. The minimum acceptable length for the shoulder taper shall be determined by multiplying the width of the shoulder by the shoulder taper rate. The shoulder taper rate is provided in Table II.

SIGN SPACING

3A. The work zone sign spacings shown in Table I are minimums. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200 feet (60 meters) for speeds of 45 mph or less and a minimum of 400 feet (120 meters) for speeds 50 mph or greater.

ADJUSTMENTS FOR SIGHT DISTANCE

4. The location of the merging taper and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

5A. ROAD WORK AHEAD (W20-1) signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK (G20-2) signs are only required for lane closures of more than 1 day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any W20-1 or G20-2 sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

6A. The Advisory Speed plaque W13-1 shall be used when specified in the plan.

6B. When the approach speed limit is 40 mph or less 36-inch (900-millimeter) warning signs may be used.

6C. The Distance plaque W16-3a (or W16-2a if the distance shown is in feet) shall indicate the distance to the beginning of the merging taper. Distances less than 1 mile may be expressed in feet. The plaque may be omitted if Extra Advance Sign Groups are not used.

6D. Provide signing on the inactive side of the highway, as shown, when specified in the plans.

EXTRA ADVANCE WARNING SIGNING

7. Extra Advance Warning Sign Groups consisting of ROAD WORK AHEAD (W20-1), LANE CLOSED AHEAD (W20-5) and WATCH FOR STOPPED TRAFFIC (W3-H7) signs plus Distance plaques may be specified in the plans or may be required to be erected, as determined by the the Engineer (see Standard Construction Drawing MT-95.50).

PAVEMENT MARKING/RPMs

8A. If the construction operation requires a lane closure for more than 1 day, then the existing conflicting reflectors shall be removed from the raised pavement markers (RPMs).

8B. Additionally, if a lane closure of greater than 3 days is required, then the following shall be performed:

a) The appropriate color work zone edge lines shall be applied along the taper.
b) The existing conflicting pavement markings shall be removed or covered as per CMS 614.11G.
c) Work Zone Dotted Lines, 3 feet (0.9 meters) in length separated by 9 foot (2.7 meter) gaps, shall be provided to identify the merge.

8C. Work zone edge lines shall be provided along the tangent section when specified in the plans.

8D. Work zone pavement markings which would conflict with the final traffic lanes shall be removable tape (CMS 740.06 Type I) unless the area will be resurfaced prior to project completion.

8E. After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 614.111. The original markings and raised pavement marker reflectors shall be restored at no additional cost unless separately itemized in the plans.

EQUIPMENT/MATERIALS STORAGE

9A. No equipment or material shall be located within the taper or buffer zone.

9B. When no work is being performed, all material and equipment shall be stored per CMS 614.03.

FLASHING ARROW PANEL

10. The flashing arrow panel shall be chosen from the ODOT approved list available on the ODOT web site.
Click on the Alphabetical List of choices and select TestLab/Materials Management. Then click on Approved List. Then click on Flashing Arrow Panel located near the bottom of the screen.

FLASHING WARNING LIGHTS

11. Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) signs and on the LANE CLOSED AHEAD (W20-5) signs are required whenever a night lane closure is necessary.

INTERSECTION/DRIVEWAY ACCESS

12. Within the length of the closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The contractor shall:

a) Place across the closed lane, either 3 drums (cones) or barricades; and/or

b) Provide an additional flagger at every public street intersection and major driveway.

Drums (cones) placed across the closed lane shall be located 25 feet (7.5 meters) beyond the projected pavement edges of the driveway or cross highway, as shown in Standard Construction Drawing MT-97.11. For barricades, see Standard Construction Drawing MT-101.60.

Existing STOP signs shall be relocated as necessary to assure proper location for the traffic conditions.

The method of control shall be subject to the approval of the Engineer.

DRUMS/CONES

13A. The maximum drum spacing along tapers and along tangent sections shall be as shown in Table II. A minimum of 5 drums shall be used to close the upstream shoulder.

13B. Cones may be substituted for drums as follows:

a) Use of cones is permissible for either daytime operation or for nighttime operation, but shall not be used continuously, day and night. Upon completion of work within the work period, the cones shall be removed. They may again be placed on the highway in order to resume work in the following such work period.
b) Cones used for daytime traffic control shall have a minimum height of 28 inches (0.7 meters).
c) Cones used for nighttime traffic control shall have a minimum height of 42 inches (1.1 meters).
d) Use of cones at night shall be prohibited along tapers.
e) Cone spacing at night shall be at a maximum of 40 feet (12 meters).
f) Where cones are substituted for drums along tangents, intermixing of channelizing devices within the same run will not be permitted. Either cones shall be used for the entire length of the tangent section, or drums shall be used for the entire length.

13C. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

13D. Drums shall not encroach into the opposing lane of traffic. If drums encroach into the opposing lane, the lane shall be closed.

SHADOW VEHICLE

14A. The shadow vehicle shall be in place and unoccupied whenever workers are in the work area. This vehicle shall be removed from the pavement whenever workers are not in the work area.

14B. The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe light(s).

14C. The vehicle shall be equipped with a truck-mounted attenuator (TMA) when specified in the plans.

07-17-09

CLOSING LEFT LANE OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS

OFFICE OF TRAFFIC ENGINEERING

MT-95.32

SHB/LAM

LEGEND

- WORK AREA
- DRUMS
- 2-WAY LEFT-TURN MARKING
- SHADOW VEHICLE
- DIRECTION OF TRAVEL

TABLE I
(SIGN SPACING)

ROAD TYPE	MINIMUM DISTANCE FT(m)
	A
URBAN ≤ 40 MPH	100 (30)
URBAN 45-50 MPH	350 (100)
RURAL 55 MPH	500 (150)

TABLE II

SPEED LIMIT (MPH)	MAXIMUM DRUM SPACING FT (m)	BUFFER (D) FT (m) MINIMUM
25	25 (7.5)	155 (45)
30	30 (9)	200 (60)
35	35 (10.5)	250 (75)
40	40 (12)	305 (95)
45	40 (12)	360 (110)
50	40 (12)	425 (130)
55	40 (12)	495 (150)

CLOSURE OF TWO-WAY LEFT TURN LANE

1-16-09

OFFICE OF TRAFFIC ENGINEERING

MT-95.60

SHB

GENERAL NOTES:

SIGNING

1A. The location of the Advance Warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. The distances shown are minimums.

1B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200 feet (60m).

1C. The Advisory Speed plaque (W13-1) shall be used when specified in the plan.

1D. If the lane closure will exist for more than one day, existing Two-Way Left Turn Only (R3-9b) signs in the work area shall be removed or covered.

1E. END ROAD WORK (G20-2) signs are only required for lane closures of more than one day.

1F. 36 inch (900 mm) warning signs may be used when the approach speed limit is 40 mph or less.

FLASHING WARNING LIGHTS

2. Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) signs and on the CENTER LANE CLOSED AHEAD (W9-3) and the CENTER LANE CLOSED (W9-H3b) signs are required whenever a night lane closure is necessary.

DRUMS/CONES

3A. Drum spacing shall be as follows:
   a) Spacing along the closure shall be as specified in Table II.
   b) A minimum of five drums shall be placed laterally at each end of the closed lane as shown in the drawing.

3B. Cones may be substituted for drums as follows:
   a) Cones used for daytime traffic control shall have a minimum height of 28 inches (0.7 m).
   b) Cones used for nighttime traffic control shall have a minimum height of 42 inches (1.1 m).

3C. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

3D. Intermixing of channelizing devices within the same run will not be permitted. Either drums shall be used for the entire run of channelizeation, or cones shall be for the entire run.

PAVEMENT MARKING/RAISED PAVEMENT MARKERS (RPMs)

4. If the construction operation requires the lane closure for more than one day then the following shall be performed:

   a) The existing conflicting reflectors from the RPMs shall be removed.

   b) The appropriate color work zone edge lines shall be applied. Existing conflicting pavement markings shall be removed or covered as per CMS 614.11F.

   c) Work Zone Pavement Markings for transition areas (lane shifts) shall be as called for in the plans.

   d) Work Zone Pavement Markings which would conflict with the final traffic lanes shall be removable (CMS 740.06 Type I) tape unless the area will be resurfaced prior to project completion.

   e) After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 641.10. The original markings and raised pavement marker reflectors shall be restored at no additional cost unless separately itemized in the plans.

   f) Existing markings which will be covered by Portable Concrete Barrier do not need to be removed.

EQUIPMENT/MATERIALS STORAGE

5. All material and equipment shall be removed from the closure and the work area when no work is being done.

SHADOW VEHICLE

6A. The shadow vehicle shall be in place and unoccupied whenever workers are in the work area.

6B. The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe light(s).

6C. The vehicle shall be equipped with a truck-mounted attenuator (TMA) when called for in the plans.

6D. The vehicle shall be removed from the pavement whenever workers are not in the work area.

6E. Other protective devices may be used in lieu of the shadow vehicle shown when approved by the Engineer.

1-16-09

CLOSURE OF TWO-WAY LEFT TURN LANE

OFFICE OF TRAFFIC ENGINEERING

MT-95.60

2/2

SHB

PAVEMENT MARKING OPERATION PROCEDURES

GENERAL

1A. In addition to CMS 614, traffic shall be maintained in accordance with the following requirements.

1B. The purpose of the following requirements for traffic control for pavement marking operations is to provide safety for highway users, workers and equipment and to protect the markings from damage during application.

1C. These requirements are the required minimums. If at any time during the application of markings it is found by the Engineer that these minimum traffic control requirements are not achieving the necessary safety and marking protection, additional traffic control shall be implemented at no additional cost.

1D. The Engineer may suspend work in order to relieve traffic congestion at any time.

1E. No work shall be done during peak hours or during any other times which could result in excessive queuing, as determined by the Engineer.

1F. Vehicles transporting flammable pavement marking materials (material supply vehicles) shall not be utilized for lead or trail vehicles or for power broom equipment.

1G. All pavement marking application, protection and support equipment following the line marking machine shall have the traffic control equipment of a shadow vehicle.

1H. Line marking machines shall not be used for sign and cone placement.

CONES AND WET PAINT-KEEP OFF SIGNS

2A. Cones and Wet Paint-Keep Off signs (R11-H6-24) shall be placed to protect the line whenever the track-free time exceeds 2 minutes.

2B. These devices shall not be removed until the line has dried to a track-free condition.

2C. Retrieval equipment shall have the traffic control equipment of a shadow vehicle.

2D. Cones shall have a minimum height of 28 inches (0.7 m).

2E. Cones shall be spaced at a maximum distance of 200 feet (60 m) to protect the wet line. In areas of traffic congestion, on curves, and at other locations where tracking of the wet line is expected, closer spacings may may be required.

2F. The Wet Paint-Keep Off signs (R11-H6-24) shall be placed facing traffic as follows:

a) The beginning and end of line application,
b) All side and cross roads, and
c) Maximum intervals of one mile (1.6 km).

2G. When line markings require greater than a two minute drying time or when the actual field conditions exceed two minute drying time, the lane from which the line marking machine applies line markings shall be closed until the line has dried to a totally track-free condition.

IMMOBILE OPERATIONS

3A. When loading material, cleaning or performing other operations in the field, every effort shall be made to have all equipment completely off of the traveled way.

3B. When it becomes necessary to enter upon private property, permission shall be obtained in advance.

3C. When the Contractor cannot remove his equipment from the traveled way, all traffic control devices on the vehicles shall be in operation and flaggers and vehicles shall be stationed to protect the work site and the traveling public.

3D. Two-way traffic shall be maintained.

3E. Flaggers shall be equipped in accordance with CMS 614.08.

AUXILIARY MARKINGS

4. Pavement preparation and placing of auxiliary markings are considered to be stationary operations and traffic control shall be in accordance with plan details, Standard Construction Drawings and The Ohio Manual of Uniform Traffic Control Devices (OMUTCD).

NIGHTTIME OPERATION

5A. Nighttime operation is defined to include the time from sunset to sunrise, and at any other time when there are unfavorable atmospheric conditions or when there is not sufficient natural light to render discernable persons, vehicles, and substantial objects on the highway at a distance of 1000 feet (300 m).

5B. During nighttime conditions the following traffic control shall be provided:
1. Cones shall be reflectorized or equipped with lighting devices for maximum visibility (See 6F.59, OMUTCD), and
2. The guide and side-mounted carriages shall be illuminated.

5C. The presence of highway lighting does not waive these requirements.

FLASHING ARROW PANEL

6A. A flashing arrow panel 5 feet (1.5 m) x 2.5 feet (0.75 m), Type B, shall be chosen from the ODOT approved list. The ODOT approved list is available on the ODOT web site at: http://www.dot.state.oh.us/testlab/applists/misc/faps.htm

6B. Arrow panels, when used on two-lane, two-way roadways shall be displayed only in the caution mode.

6C. When not in use, arrow panels shall be tilted horizontally or covered.

TRUCK MOUNTED ATTENUATOR (TMA)

7A. When called for in the plans the shadow vehicle(s) shall be equipped with a truck mounted attenuator (TMA). The TMA. must bring a vehicle weighing about 1800 to 4500 pounds. (815 to 2040 kg) and traveling at 60 mph to a safe, controlled stop, per NCHRP 350 criteria.

7B. A shadow vehicle with truck mounted attenuator should be used in accordance with manufacturer's specifications and must meet NCHRP 350 with acceptable written manufacturer certification submitted to the Engineer before the devices are used on the project.

1-16-09

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

OFFICE OF TRAFFIC ENGINEERING

MT-99.20

SHB

PAVEMENT MARKING VEHICLES AND EQUIPMENT

LEAD VEHICLE

8A. A lead vehicle shall be used to warn opposing traffic of the approach of center line and other marking equipment when this equipment extends into the adjacent opposing traffic lane.

8B. The lead vehicle shall precede the "left-of-center" marking equipment a distance that will provide advance safe warning to approaching traffic.

8C. The operator of this unit shall drive ahead of the crest of a vertical curve or around a horizontal curve and wait until the "left of center" marking equipment nears and then proceed, maintaining an advance location of 400 feet (120 m) to 600 feet (180 m).

8D. A lead vehicle shall be equipped with the following traffic control devices:
- a) A high-intensity yellow rotating, flashing, oscillating, or strobe light(s), clearly visible a minimum of one quarter mile (400 m).
- b) Lighted headlights and taillights, and
- c) A KEEP RIGHT sign (W24-H4-48) and WET PAINT sign (W24-H3-48)mounted a minimum of 5 feet (1.5 m) above the road surface measured to the bottom of the sign, and visible to opposing traffic.

POWER BROOM EQUIPMENT

9. Power broom equipment shall be equipped and operated during pavement preparations with the following traffic control devices:
- a) A high-intensity yellow rotating, flashing, oscillating, or strobe light(s), clearly visible a minimum of one quarter mile (400 m).
- b) Lighted headlights and taillights, and
- c) A Flashing Arrow Panel 5 feet (1.5 m) x 2.5 feet (0.75 m) (Type B), displayed to the rear, mounted a minimum of 7 feet (2.1 m) above the road surface, measured to the bottom of the panel.

VEHICLE FOR LAYOUT AND PREMARKING

10. The vehicle used in layout and premarking shall be equipped and operated with the following equipment:
- a) A high-intensity yellow rotating, flashing, oscillating, or strobe light(s), clearly visible a minimum of one quarter mile (400 m).
- b) Lighted headlights and taillights, and
- c) A KEEP RIGHT sign (W24-H4-48) mounted a minimum of 5 feet (1.5 m) the road surface measured to the bottom of the sign, and visible to opposing traffic.

LINE MARKING MACHINE

11. All traffic line marking machines shall be equipped and operated with the following traffic control equipment:

11A. Three high-intensity yellow rotating, flashing, oscillating, or strobe lights, clearly visible a minimum of one quarter mile (400 m), one forward, one on the right rear and one on the left rear of the vehicle.

11B. Any one of the following two:
1) A Flashing Arrow Panel 5 feet (1.5 m) x 2.5 feet (0.75 m) (Type B), displayed to the rear, mounted a minimum of 7 feet (2.1 m) above the road surface, measured to the bottom of the panel.

or

2) A DO NOT PASS sign (R11-H7-48) visible to the rear during center line marking on two-lane, two-way roadways and mounted a minimum of 7 feet (2.1 m) above the road surface, measured to the bottom of the sign. This sign may be used to cover the arrow panel when used on two-lane, two-way roadways.

11C. A WET PAINT with Arrow sign (W24-H2a-24 or W24-H2-48) shall face the rear as follows:
1) The sign shall be positioned with the arrow pointing to the wet line.
2) When used, W24-H2a-24 shall be mounted on the side of the vehicle nearest the wet marking material.
3) W24-H2a-24 and W24-H2-48 signs shall be mounted a minimum of 1 foot (0.3 m) above the road surface, measured to the bottom of the signs.

11D. A KEEP RIGHT sign (W24-H4-48) and WET PAINT sign (W24-H3-48) mounted a minimum of 5 feet (1.5 m) above the road surface, measured to the bottom of the sign facing opposing traffic when this unit extends into the adjacent opposing traffic lane.

11E. The guide and side mounted marking carriages shall each be equipped with a clean red flag not less than 24 inches (0.6 m) square and fastened to a staff of sufficient length so as to permit the flag to move freely of any obstruction.

SHADOW VEHICLE

12. When required, a shadow vehicle shall be positioned at the track free end of the wet line.

13. Shadow vehicles shall be equipped and operated with the following traffic control equipment (Also see Figure 6H-17 & 6H-35 in the OMUTCD) :

13A. A high-intensity yellow rotating, flashing, oscillating, or strobe light(s), clearly visible a minimum of one quarter mile (400 m).

13B. Any one of the following two:
1) A Flashing Arrow Panel 5 feet (1.5 m) x 2.5 feet (0.75 m) (Type B), displayed to the rear, mounted a minimum of 7 feet (2.1 m) above the road surface, measured to the bottom of the panel.

or

2) A DO NOT PASS sign (R11-H7-48) visible to the rear during center line marking on two-lane, two-way roadways and mounted a minimum of 7 feet (2.1 m) above the road surface, measured to the bottom of the sign. This sign may be used to cover the arrow panel when used on two-lane, two-way roadways.

13C. A WET PAINT with Arrow sign (W24-H2a-24 or W24-H2-48) shall face the rear as follows:
1) The sign shall be positioned with the arrow pointing to the wet line.
2) When used, W24-H2a-24 shall be mounted on the side of the vehicle nearest the wet marking material.
3) W24-H2a-24 signs shall be mounted a minimum of 1 foot (0.3 m) above the road surface and W24-H2-48 shall be mounted a minimum of 5 feet (1.5 m) above the road surface, both measured to the bottom of the sign.

MINIMUM PAVEMENT MARKING TRAFFIC CONTROL EQUIPMENT REQUIREMENTS

This table indicates the traffic control equipment which shall be furnished for each type of long line pavement marking operation. In addition, the type of traffic control equipment which shall be furnished when directed by the Engineer is indicated.

EQUIPMENT	PAVEMENT MARKING LINE TYPE (1)					
	CENTER LINE		EDGE LINE		LANE LINE (2) CHANNELIZING LINE (3)	
	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY
LEAD VEHICLE	A	A	C	C	C	C
POWER BROOM EQUIPMENT	B	B	A	A	B	B
LINE MARKING MACHINE	A	A	A	A	A	A
SHADOW VEHICLE	D	A	D	A	LANE CLOSURE REQUIRED (28 in (0.7 m) CONES REQUIRED)	A
SHADOW VEHICLE (ADDITIONAL)	C	B	C	B		A
SHADOW VEHICLE (SIGN & CONE RETRIEVAL)	A	C	A	C		C
SHADOW VEHICLE (SHADOW FOR RETRIEVAL)	A	C	A	C		C

(1) FOR EQUIPMENT REQUIREMENTS FOR AUXILIARY MARKING OPERATIONS SEE THE PLANS AND PART 6, OMUTCD.

(2) INCLUDES BOTH DASHED AND SOLID LANE LINES.

(3) CHANNELIZING LINE SEGMENTS OF 200 FEET (60 m) OR LESS SHALL BE CONSIDERED AUXILIARY MARKINGS, EXECPT WHEN APPLIED AS COMPONENTS OF GORE MARKINGS SPRAYED IN MOVING OPERATIONS SEPARATE FROM THE APPLICATION OF TRANSVERSE LINES.

A	REQUIRED EQUIPMENT
B	EQUIPMENT REQUIRED WHEN DIRECTED BY THE ENGINEER
C	NOT REQUIRED
D	REQUIRED EQUIPMENT FOR SIGN & CONE PLACEMENT

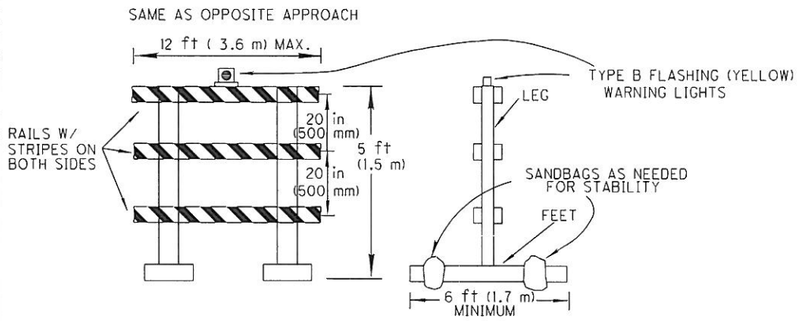
1-16-09

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

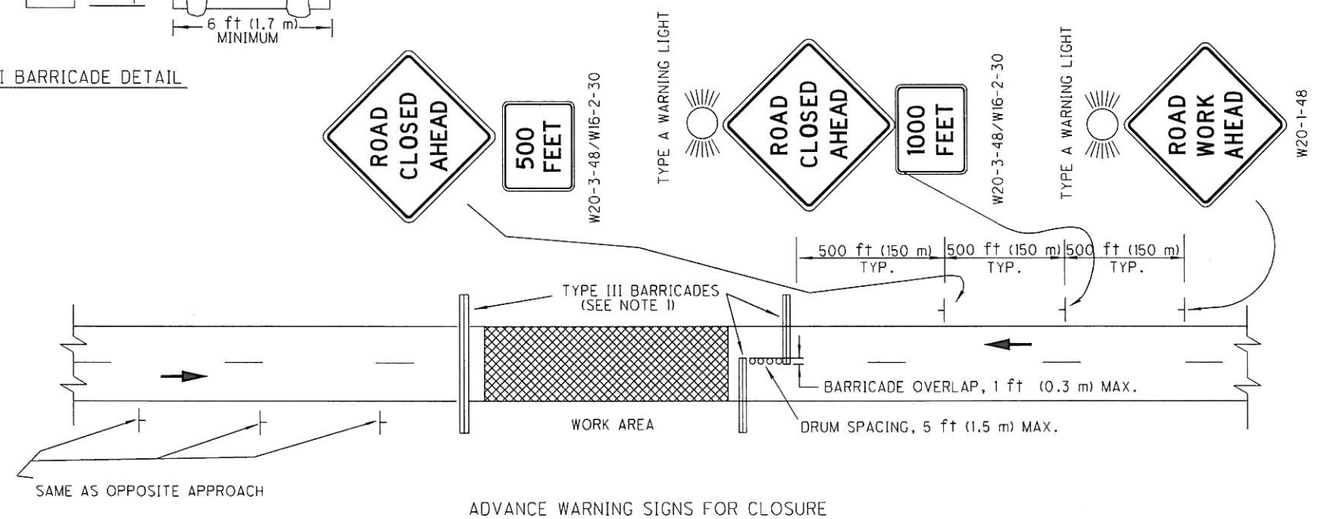
OFFICE OF TRAFFIC ENGINEERING

MT-99.20

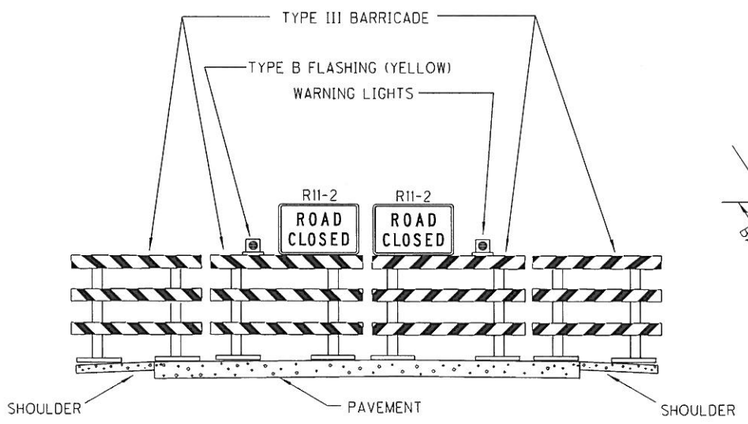
SHB



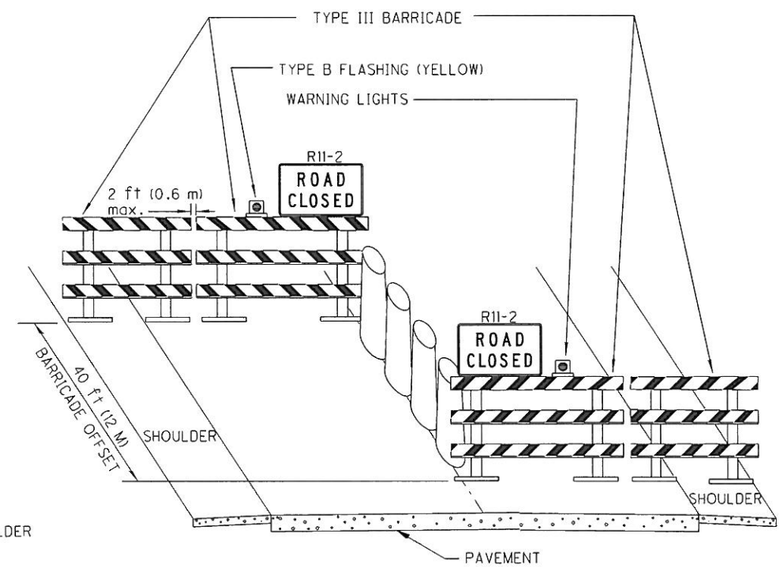
TYPE III BARRICADE DETAIL



ADVANCE WARNING SIGNS FOR CLOSURE



BARRICADE CLOSURE PROFILE



BARRICADE CLOSURE OFFSET OPTION

GENERAL NOTES

BARRICADE USE

1A. Barricades shall be NCHRP 350 compliant and shall be erected according to details shown. When the road is closed to traffic, barricades shall be used to effectively close the entire roadway, including the paved or aggregate shoulder.

1B. Barricades along adjacent lanes may be offset from each other as shown, with drums used to close the resulting gap. Maximum drum spacing shall be 5 feet (1.5 m).

BARRICADE REFLECTORIZATION AND COLOR

2A. In construction or maintenance areas, all rails of the barricades shall be reflectorized with orange and white reflectorized Type G sheeting in 6 inch (150 mm) wide alternate stripes which slope downward toward the center line of the road at an angle of 45°. All three rails of the barricade shall be striped on both sides. Legs and feet shall be either all-white or may display the natural color of the material used.

2B. Barricades used in permanent or semi-permanent application shall differ only in that they shall use red and white stripes.

SIGNS

3A. Where the road is closed to traffic by the erection of barricades, ROAD CLOSED (R11-2) signs shall be mounted laterally as shown.

3B. The Advance Warning Signs shown on this drawing are intended for use when the travelled way is brought to an end with no direction given to traffic. Where traffic has been directed from the permanent roadway at or just in advance of the barricades, advance signing should be provided as shown in Standard Cconstruction Drawing MT-95.70 or OMUTCD Figure 6H-7 as appropriate.

3C. Advance Warning Signs approaching a lane closure, as shown on these plans, shall consist of two ROAD CLOSED AHEAD (W20-3) signs with distance plaques placed about 500 feet (150 m) and 1000 feet (300 m) from the closure, and a ROAD WORK AHEAD (W20-1) sign placed about 1500 feet (450 m) from the closure. The signs shall be placed on both sides of the roadway for 4-lane divided highways or when required by the plans.

FLASHING WARNING LIGHTS

4A. Type A Flashing Warning Lights are required on the ROAD WORK AHEAD (W20-1) sign and on the first ROAD CLOSED AHEAD (W20-3) sign.

4B. Type B Flashing Warning Lights shall be provided on Type III Barricades, one light per each closed lane. Each light shall be conspicuously visible at all distances up to 1000 feet (300 m) under normal atmospheric conditions. The light shall be in operation at all times during the period the highway is closed.

OPERATION ON 2-LANE 2-WAY ROADWAYS

5A. Where the barricade runs across the entire roadway without longitudinally offsetting sections, the Contractor will normally open only the left side of the barricade as necessary to allow the construction vehicle to enter, and then shall immediately close it. The entire barricade will not normally be opened at the same time. The Contractor shall assign an employee to assure that the barricade is closed at the end of each workday.

5B. Where the sections of the barricade are offset from each other with drums provided to close the gap (see note 1B), the Contractor may move the drums as necessary to allow the construction vehicle to enter, and then shall immediately replace the drums. The Contractor shall assign an employee to assure that the drums are in place at the end of each workday.

4-17-09

ROAD CLOSURE USING TYPE III BARRICADES

OFFICE OF TRAFFIC ENGINEERING

MT-101.60

1 / 1

SHB

CONDITION I

DROP-OFFS BETWEEN ADJACENT TRAVELED LANE(S) /PAVED SHOULDER

(Freeways, Expressways, other Multilane ≥ 45 mph)

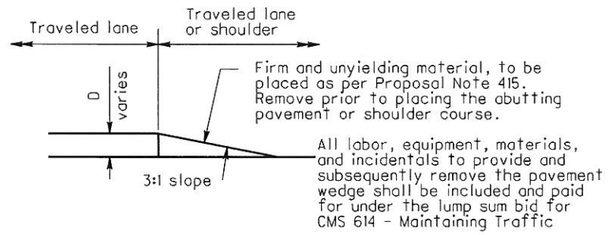
1. These treatments are to be used for resurfacing or pavement planing, etc. where a drop-off is located between or within traveled lanes and/or shoulder.

D	Treatment
≤1½in (<40 mm)	Erect W8-11 or W8-9 sign as appropriate.
1½in-3 in (40 mm -75 mm)	1) Optional Wedge Treatment OR 2) Close a lane and/or shoulder as per Condition II
>3 in (>75 mm)	Close a lane and/or shoulder as per Condition II.

OPTIONAL WEDGE TREATMENT

(MILLING OR RESURFACING)

1. W8-9/W8-11 sign shall be used as appropriate.
2. This treatment shall not be used where a hot longitudnal joint per CMS 446 is required.



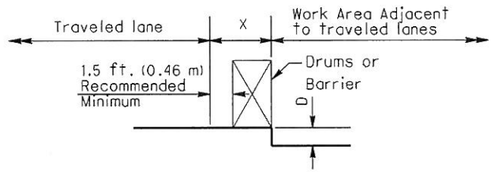
CONDITION II

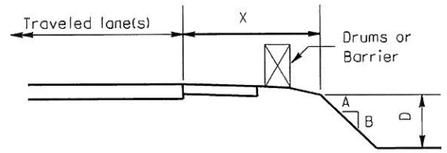
DROP-OFFS BEYOND EDGE OF TRAVELED LANES/PAVED SHOULDER

(Freeways, Expressways, other Multilane ≥ 45 mph and minimal driveways)

1. The treatments indicated below are for use in conjunction with resurfacing, planing or excavations located beyond the edge line of the traveled lanes.
2. The treatments indicated below are applicable for pavement/shoulder drop-offs and for locations where foreslopes "A/B" are steeper than 3:1.
3. Where the drop-off is located outside the clear zone, no treatment is neccessary. (See Table II on MT-95.30. 95.40, or 102.10)
4. Where foreslopes "A/B" are flatter than 3:1, no treatment is necessary.

D	Method of Drop-off Protection to be used to separate the traffic from the drop-off						
	Drop-off location "X" from traveled lane <4 ft (1.2 m)	Drop-off location "X" from traveled lane 4 -12 ft (1.2 - 3.6 m)		Drop-off location "X" from traveled lane 12 -20 ft (3.6 - 6.1 m)		Drop-off location "X" from traveled lane 20 -30 ft (6.1- 9.1 m)	
		Daytime Only	Night	Daytime Only	Night	Daytime Only	Night
≤3in (≤75mm)	DRUMS or OPTIONAL WEDGE TREATMENT	NONE	NONE	NONE	NONE	NONE	NONE
>3 in-5 in (>75mm-125mm)	DRUMS or OPTIONAL WEDGE TREATMENT	DRUMS	DRUMS	NONE	NONE	NONE	NONE
>5 in-12 in (>125mm-305mm)	PCB	DRUMS	DRUMS	NONE	NONE	NONE	NONE
>12 in-24 in (>305mm-610mm)	PCB	DRUMS	PCB	DRUMS	DRUMS	NONE	NONE
>24 in (>610 mm)	PCB	DRUMS	PCB	DRUMS	PCB	DRUMS	PCB



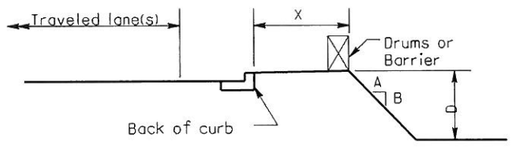


GENERAL NOTES

1. It is intended that this drawing be used for treatment of drop-offs that develop during construction operations and that are not otherwise provided for in the construction plans. Where the plans do not provide specific items for labor, equipment, or materials to implement the drop-off treatments specified herein, they shall be included for payment in the lump sum bid for CMS 614 - Maintaining Traffic
2. Minimum lane widths shall be 10 feet (3.0 m) unless otherwise specified in the plans.
3. While the need for certain advisory signing is noted herein, it is not intended that this be indicative of all signing that may be required to advise or warn motorists, and all requirements of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) must be fulfilled.
4. In urban or otherwise heavily developed areas where intersections, driveways, pedestrians and/or bicyclists may be present in significant numbers, additional signing and protective measures other than those shown herein may be required.
5. The drop-off treatment selected for use at any given location shall be as appropriate for the prevailing conditions at the site.
6. Where portable concrete barrier is specified, it shall be in accordance with SCD RM-4.1 or 4.2 and with CMS 622.
7. For locations, such as at ramps, lane shifts, lane closures, etc., where traffic is required to negotiate a difference in elevation between pavements, the Optional Wedge Treatment shall be provided.
8. Pavement Repairs (or similar work):
   a. Lengths greater than 60 feet (18 m) - utilize appropriate treatment from Condition I.
   b. Lengths of 60 feet (18 m) or less - repairs shall be effected in accordance with CMS 255.08. Drums may be used as a separator adjacent to the traveled lane.
9. When drums are specified for a drop-off condition, a minimum number of four drums shall be used. Spacing shall be as indicated in the plans or as specified in the OMUTCD. Provisions shall be made to stabilize the drums (cones) to prevent them from blowing over.
10. When W8-11 (Uneven Lanes) signs or W8-9 (Low Shoulder) signs are required, they shall be placed 750 feet (230 m) in advance of the condition on all intersecting entrance ramps within the limits of the condition, and immediately beyond all intersection roadways within the limits of the condition. When the drop-off condition extends more than 0.5 miles (800 m), additional signs should be erected at intervals of 1.0 mile (1600 m) or less.
11. Cones may be substituted for drums as follows:
    a. Cones used for daytime traffic control shall have a minimum height of 28 inches (0.7 m).
    b. Cones used for nighttime traffic control shall have a minimum height of 42 inches (1.1 m).
    c. Cones used at night shall be reflectorized.
    d. Use of cones at night shall be prohibited along tapers.
    e. Intermixing of drums and cones within the same run of barrier protection shall not be permitted.
12. Where drums are used, and their presence would reduce traveled lane widths to less than 10 feet (3.0 m), drums may be placed on the opposite level from that of traffic, provided the drop-off depth does not exceed 5 inches (125 mm) and approval is granted by the Project Engineer.
13. Portable concrete barrier shall be placed on the same level as the traffic surface and shall not encroached on lane width(s) designated as the minimum required for traffic use.

CONDITION III

DROP-OFFS BEHIND CURB WHERE THE CURB IS 6 in (150 MM) OR GREATER IN HEIGHT AND THE LEGAL SPEED IS 40 MPH (70 KM/H) OR LESS



X	D	A/B	Treatment Required	
			Day	Night
0-10 ft (0-3.0 m)	<12 in (<305mm)	Any	None	Drums
0-10 ft (0-3.0 m)	>12 in (>305mm)	Any	Drums	Drums
>10 ft (>3.0 m)	Any	Any	None	None

1-16-09

DROP-OFFS IN WORK ZONES

OFFICE OF TRAFFIC ENGINEERING

MT-101.90

1 / 1

SHB

TEMPORARY SIGN SUPPORT REQUIREMENTS

PLACEMENT OF SIGNS

1. Lateral placement to nearest edge of signs shall be as follows:

   a) On the right side of the road for approaching traffic (except for dual mounted signs and signs designated in the plans for left side mounting).

   b) Curbed roadway - minimum 2 feet (0.6 m) behind face of curb.

   c) Uncurbed roadway- 12 feet (3.6 m) from edge of traffic lane or 6 feet (1.8 m) from edge of paved or useable shoulder, whichever is greater.

   d) Behind guardrail or barrier - See table

SIGN OFFSET BEHIND GUARDRAIL AND BARRIER

Barrier type / Support class	BEHIND FACE OF GUARDRAIL	BEHIND FACE OF CONCRETE BARRIER
Class A supports	2 feet (0.6 m) preferred 1 foot (0.3 m) minimum	1 foot (0.3 m) minimum*
Class B supports	6.5 feet (2.0 m) minimum	1 foot (0.3 m) minimum*

*unless barrier top mounting is required by the plans

2. Vertical clearance of signs, as measured from near side roadway edge, shall be as follows:

   a) Rural - 5 feet (1.5 m) when parked cars, construction equipment, etc will not obscure sign visibility.

   b) Rural areas with parked cars or construction equipment - 7 feet (2.1 m)

   c) Urban - 7 feet (2.1 m)

   d) Care shall be taken to assure that signs will not be obscured by construction equipment, trees, weeds or other obstacles. Brush, weeds or grass within the right of way shall be trimmed as necessary.

   e) For signing which will remain for three days or less, minimum vertical clearance shall be 1 feet (0.3 m) from roadway to bottom of sign.

CLASSES OF SUPPORTS:

3. The Contractor shall choose sign supports of adequate strength and with adequate foundations and anchorage to support the sign sizes erected. Sign supports which fail under typical wind load conditions shall be immediately modified or replaced with a support of adequate strength.

4. All temporary sign supports shall be of the following types:

CLASS A:

Class A supports shall include the following:

a) All No. 2 and No. 3 posts when installed singly or in pairs (side by side) according to the details of Standard Construction Drawings TC-41.10 and TC-41.20.
b) Wood posts as shown in SOLID WOOD POSTS detail
c) All breakaway connection beam supports, when installed according to the proper details shown on Standard Construction Drawing TC-41.10 with a minimum clear distance between supports of 7 feet (2.1m) for supports larger than w6 x 9.
d) Any breakaway post or post and connection which are certified as per CMS 614.03.
e) Portable Supports

Use of Class A supports shall be required at unprotected locations on ODOTs ROADWAY system. They may also be used on other roadway systems.

CLASS B:

Class B Supports shall include the following:

a) All beam type supports without breakaway connections
b) Supports similar to but larger than permitted for Class A.

Class B Supports shall be used only at the following locations:

a) Within the clear zone where protected by guardrail or concrete barrier or where positively protected from traffic such as on retaining walls.
b) Outside the clear zone

5. All Class A and B supports shall be NCHRP 350 compliant.

SUPPORTS AND SIGNS

6A. Supports for signs which will remain in place more than three days should be fixed rather than portable except in situations where the sign must rest on permanent pavement or other surface which would be damaged by insertion of post type supports.

6B. Portable signing, including portable supports, ballasting of the supports, and signs shall be NCHRP 350 compliant.

6C. Ballasting of portable supports shall be in accordance with NCHRP 350 testing of the subject support.

1-16-09

TEMPORARY SIGN SUPPORT

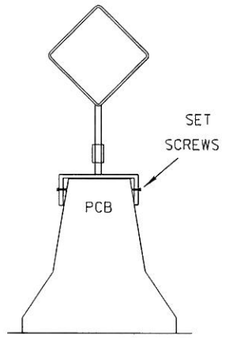
OFFICE OF TRAFFIC ENGINEERING

MT-105.10

SHB

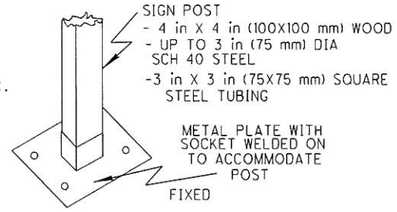
CLASS A SUPPORTS

FIXED



TYPE 1

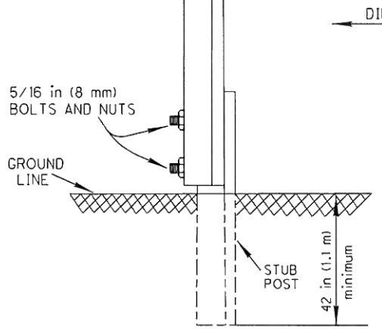
FASTEN TO TOP OF PCB
WITH EXPANSION BOLTS, ETC.



TYPE 2

CLASS A SUPPORTS

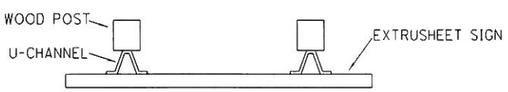
STUBBING STANDARD



NOTES

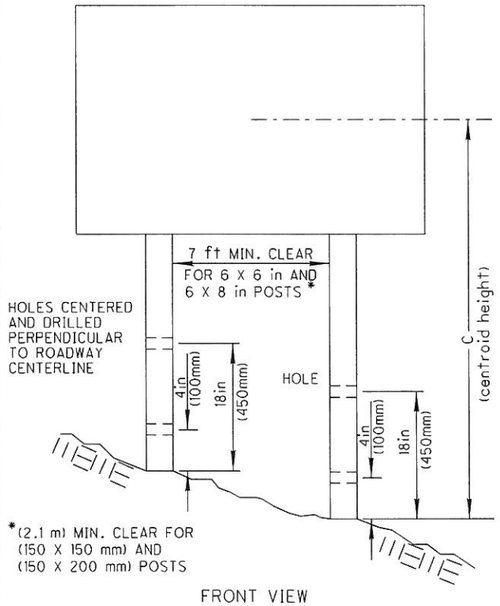
1. FOR USE WITH No. 2 OR No. 3 POSTS
2. BOOSTER POST SHALL BE THE SAME OR 1 lb/ft (1.5 kg/m) LESS THAN STUB POST
3. WHEN THE BOOSTER POST IS SMALLER THAN THE STUB POST, THE BOOSTER POST SHALL BE MOUNTED IN FRONT OF THE STUB POST.
4. WHEN THE BOOSTER POST IS THE SAME SIZE AS THE STUB POST, THE BOOSTER POST SHALL BE MOUNTED BEHIND THE STUB POST.
5. BOLTS AND NUTS AND OTHER FASTENERS SHALL BE STEEL OR ALUMINUM
6. A MINIMUM OF TWO BOLTS AND NUTS OR OTHER FASTENERS SHALL BE USED PER POST ASSEMBLY
7. WITH STEEL BOLTS, THE MINIMUM CENTER-TO-CENTER SPACING BETWEEN BOLTS SHALL BE 4 inches (100 mm).
8. STUB HEIGHT SHOULD BE LIMITED TO 4 inches (100 mm) ABOVE THE GROUND WHEN USING ALUMINUM BOLTS FOR THE CONNECTION.

SOLID WOOD POSTS



TOP VIEW

WHEN FLAT SHEET SIGNING IS PROVIDED, BOLT THE FLAT SHEET DIRECTLY TO THE WOOD POSTS. DO NOT USE U-CHANNELS

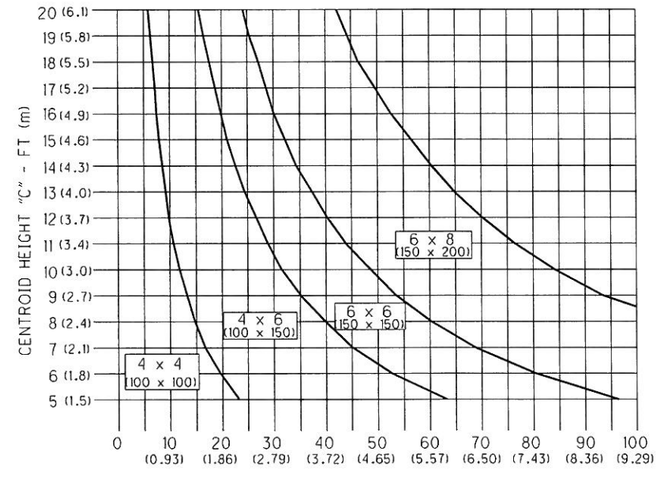


FRONT VIEW

NORMAL POST SIZE	HOLE DIAMETER	NO. of POSTS PERMITTED IN 7 ft PATH IN EXPOSED LOCATIONS	MINIMUM RECOMMENDED EMBEDMENT DEPTH
4 X 4 in (100 X 100 m)	NONE	2	3.5 ft (1.05 m)
4 X 6 in (100 X 150 m)	1½in (38 mm)	2	4 ft (1.2 m)
6 X 6 in (150 X 150 m)	2 in (50 mm)	1	4.5 ft (1.35 m)
6 X 8 in (150 X 200 m)	3 in (75 mm)	1	5 ft (1.5 m)

DESIGN CHART FOR WOOD POSTS TWO-POST INSTALLATIONS

(Nominal Post Size in inches (mm))



1-16-09

TEMPORARY SIGN SUPPORT

OFFICE OF TRAFFIC ENGINEERING

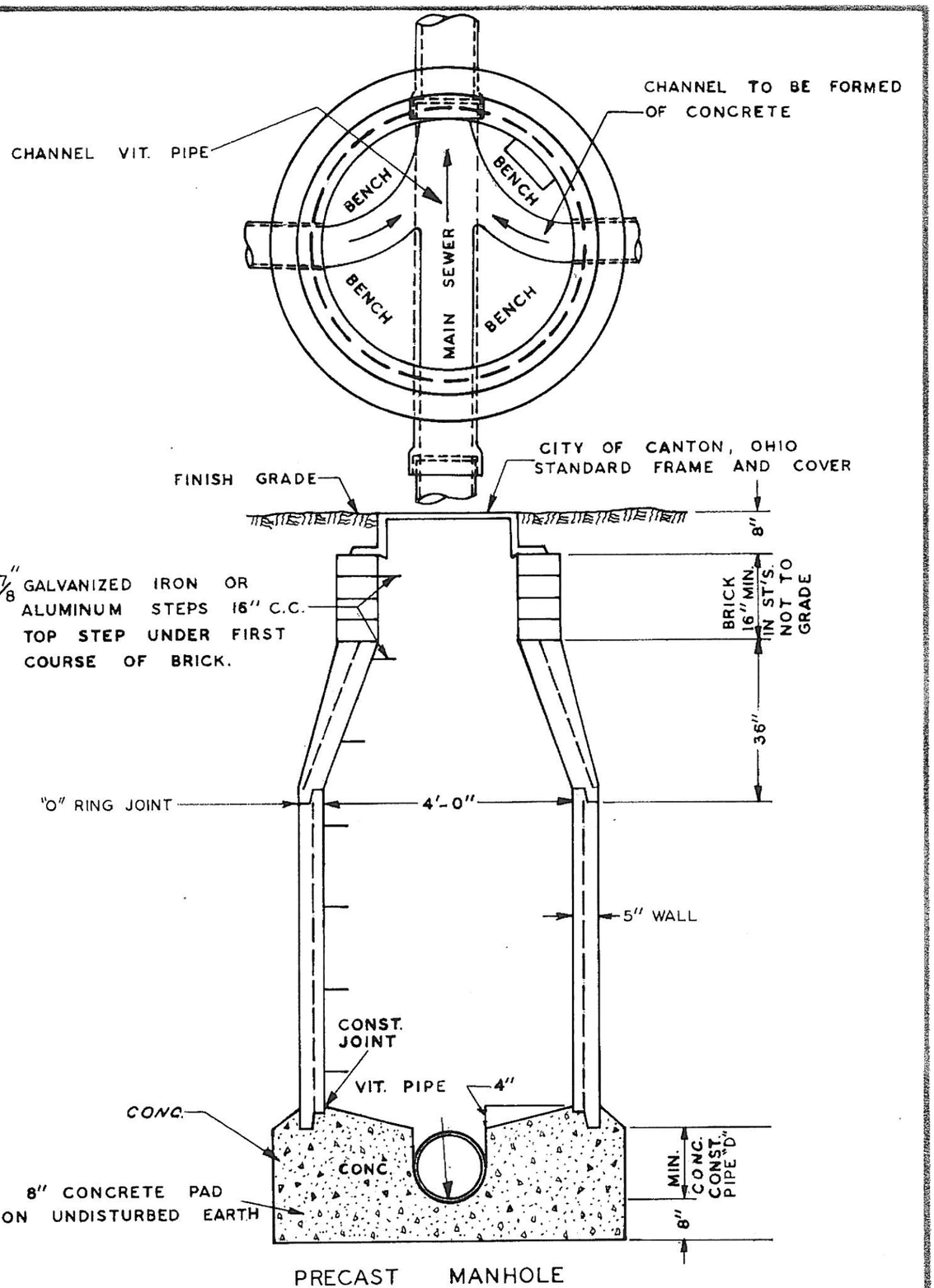
MT-105.10

SHB

CITY OF CANTON, OHIO

STANDARD CONSTRUCTION DRAWINGS

OFFICE OF CITY CIVIL ENGINEER



PRECAST MANHOLE

SCALE 1/2" = 1'-0"

CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

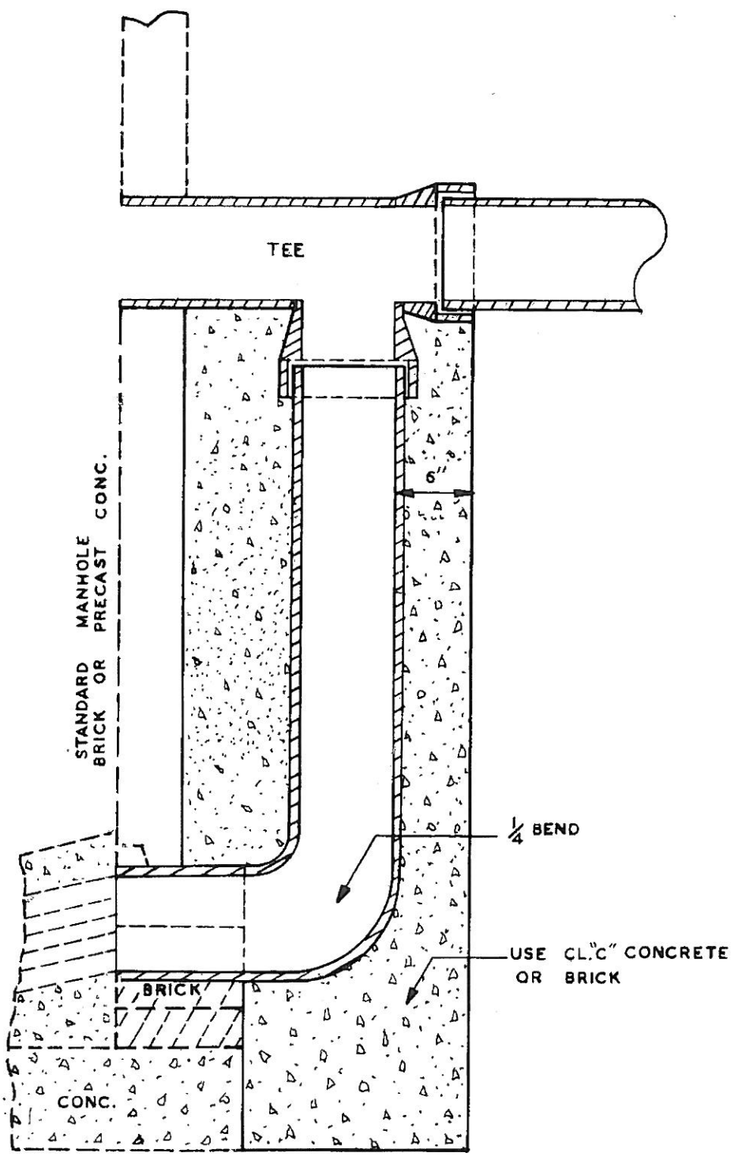
STANDARD PRECAST MANHOLE ON 42" AND UNDER.

STANDARD DRAWING 15

APPROVED CCE. 5-16-67 DATE

JAL

NOTE:
CONC. & REINFORCING TO MEET STANDARD HIGHWAY SPECS.
THE INTERIOR SHALL BE COATED WITH TWO (2) COATS OF KOPPER'S BITUMASTIC BLACK SOLUTION OR APPROVED EQUAL. (SAN. SEW. MH'S. ONLY)



SCALE 1" = 1'-0"

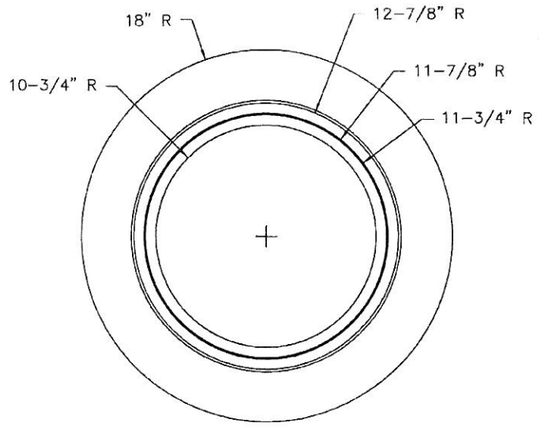
CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

STANDARD DROP ATTACHMENT FOR MANHOLES

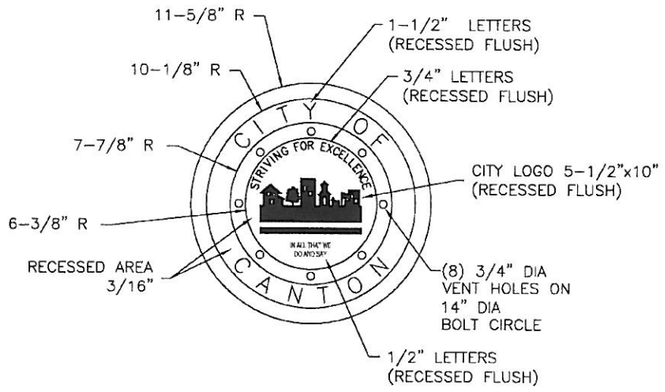
STANDARD DRAWING 18

APPROVED PMcCE. 5-16-67 DATE

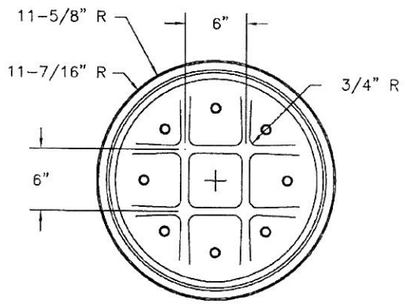
JAL



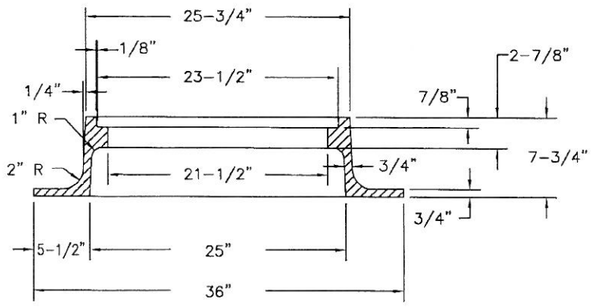
TOP VIEW OF FRAME



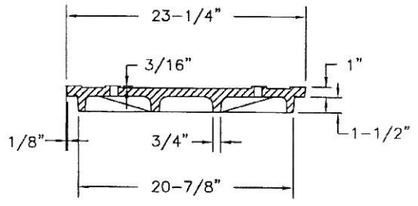
TOP VIEW
OF COVER



BOTTOM VIEW
OF COVER



SECTION VIEW
OF FRAME



SECTION VIEW
OF COVER

NOTES:

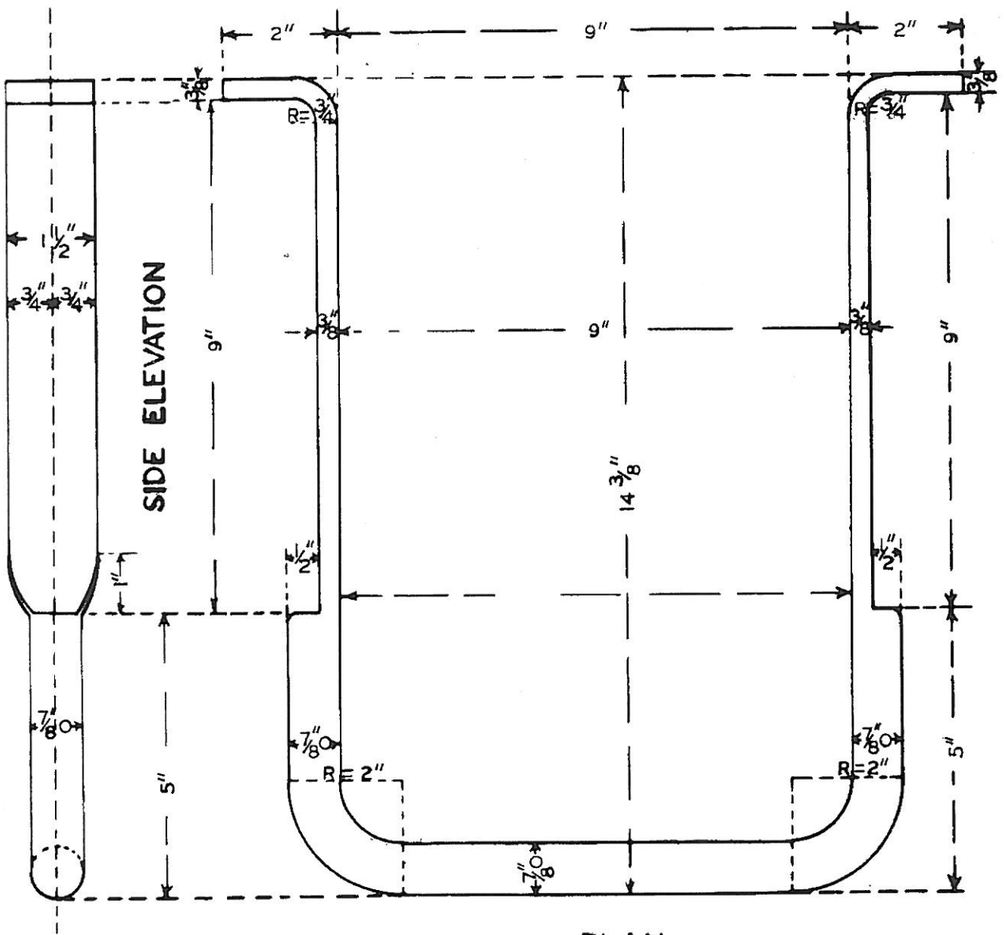
1. COVER AND FRAME TO BE CAST OF GRAY IRON IN COMPLIANCE WITH ASTM SPEC. ASTM A-48 CLASS 35. CASTINGS SHALL BE OF THE HEAVY DUTY RATING.
2. AVERAGE WEIGHT OF COVER = 155 LBS.
3. AVERAGE WEIGHT OF FRAME = 335 LBS.
4. MACHINE BEARING SURFACES BETWEEN LID AND FRAME.
5. CASTINGS MUST BE COATED WITH A BITUMASTIC PAINT.
6. EAST JORDAN 1850 B COVER (PRODUCT NO. 185026) AND 1850 FRAME, OR EQUAL APPROVED BY CITY ENGINEER.
7. CONTACT CITY ENGINEER FOR DETAIL OF CITY LOGO.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

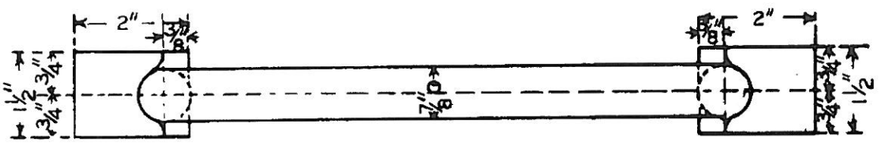
STANDARD DRAWING NO. 19
MANHOLE CASTING

REVISIONS		
DESCRIPTION	DATE	BY

DRAWN BY: RMB	DATE: JAN 2001
APP'D BY: JMD 3/8/01	H. SCALE: 1" = 1'
FIELD BK:	V. SCALE: N/A
DWG# CE-19.DWG	SHEET 1 OF 1



PLAN



END ELEVATION

SCALE 3/8" = 1"

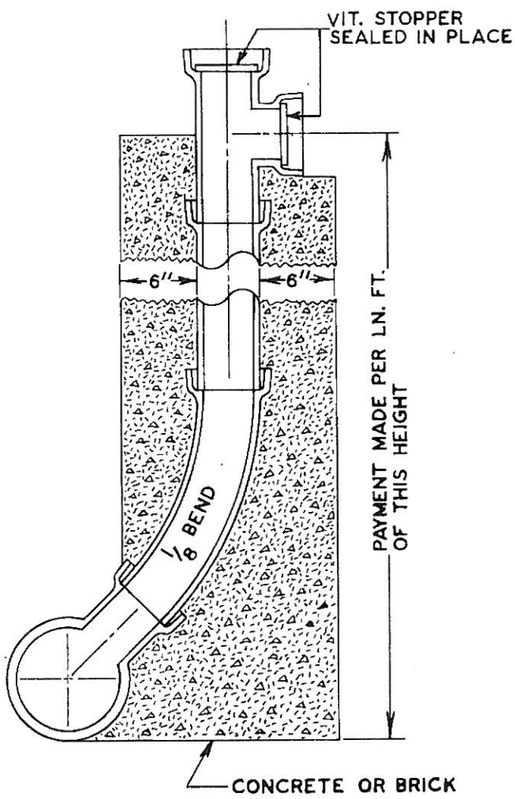
CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

GALVANIZED IRON MANHOLE STEPS

STANDARD DRAWING
APPROVED CCE 8-1-67 DATE

20.

DOUBLE CONNECTIONS USED AT
DIRECTION OF THE ENGINEER.
NO EXTRA PAY FOR "T" BRANCHES.



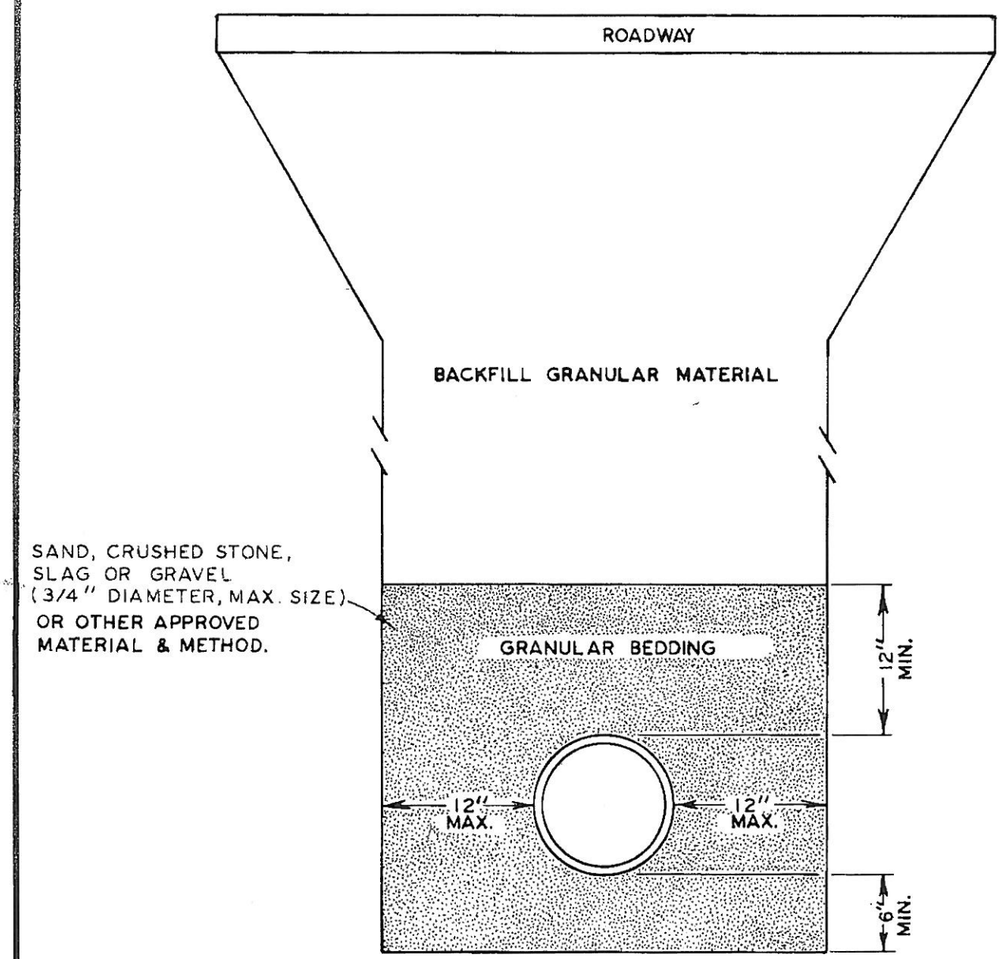
SCALE 1"=1'

CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

HOUSE CONNECTION STACK

STANDARD DRAWING
APPROVED RH CCE. 8-1-67 DATE

28



NOTE:

ALL BACK-FILL UNDER STREET PAVEMENT SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES LOOSE DEPTH AND COMPACTED BY APPROVED MECHANICAL MEANS. ALL MATERIALS USED UNDER PAVEMENTS SHALL BE EITHER SAND OR RUN OF MINE GRAVEL OR APPROVED EXCAVATED MATERIAL IF GRANULAR GRANULAR MATERIALS CONTAINING NO CLAY MAY BE JETTED OR PUDDLED OR PLACED IN PONDED WATER PROVIDED COMPLETE DRAINAGE IS POSSIBLE AND APPROVAL OF THE ENGINEER OBTAINED.

SCALE 1" = 1'

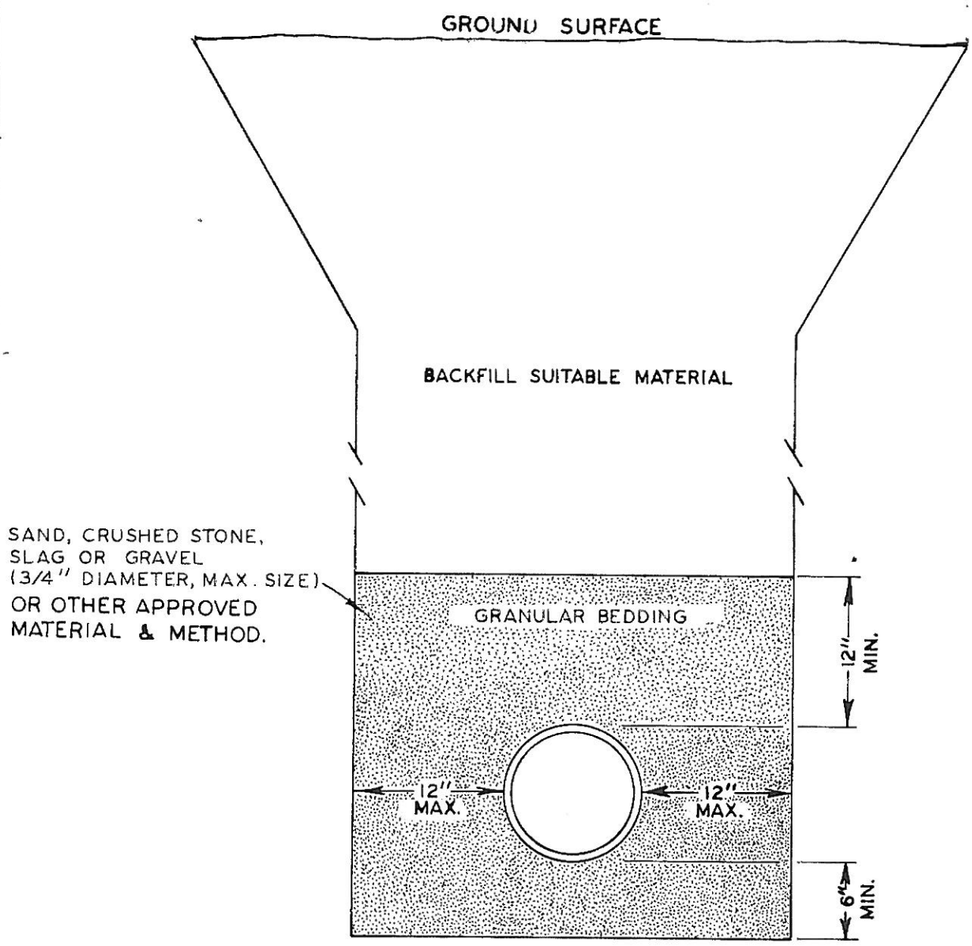
CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

BACKFILL & BEDDING DETAIL FOR ROADWAY UTILITY DITCHES

REV. 5-2-89
REV. 4-14-75
REV. 2-10-69

STANDARD DRAWING
APPROVED CCE. 8-1-67 DATE

29



NOTE:

BACKFILL SHALL BE PLACED IN LAYERS NOT TO EXCEED 8" LOOSE DEPTH AND COMPACTED BY APPROVED MECHANICAL MEANS. GRANULAR MATERIAL CONTAINING CLAY MAY BE JETTED OR PUDDLED OR PLACED IN PONDED WATER PROVIDED COMPLETE DRAINAGE IS POSSIBLE AND APPROVAL OF THE ENGINEER IS OBTAINED.

SCALE 1"=1'

CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

BACKFILL & BEDDING DETAIL FOR NON-ROADWAY UTILITY DITCHES

REV. 5-2-89
REV. 2-10-69

STANDARD DRAWING
APPROVED CCE. 8-1-67 DATE

30

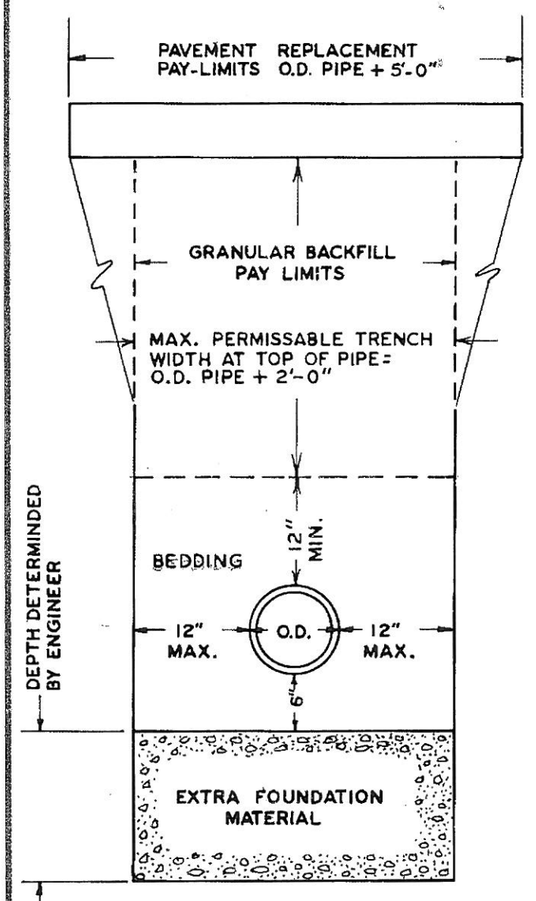
EXTRA FOUNDATION MATERIAL

DEFINITION: WHEN IN THE OPINION OF THE ENGINEER, SOFT UNSTABLE MATERIALS ARE ENCOUNTERED WHICH ARE UNSUITABLE FOR THE BEDDING FOUNDATION, SAID MATERIALS SHALL BE REMOVED BY THE CONTRACTOR TO THE DEPTH DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE MATERIAL. IF SUITABLE REPLACEMENT MATERIALS IS NOT FOUND IN EXCAVATION, IT SHALL BE PAID FOR UNDER THIS SECTION.

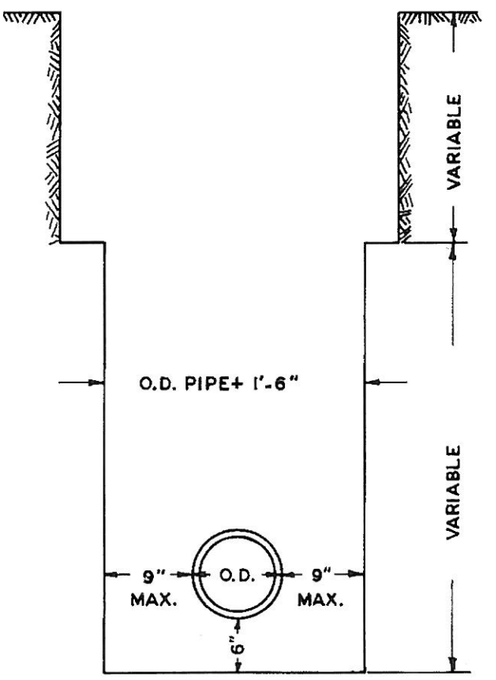
MATERIAL: SHALL CONSIST OF RUN-OF-MINE GRAVEL, GRAVEL, CRUSHED STONE OR SLAG TO THE SATISFACTION OF THE ENGINEER

PAYMENT: THE PRICE BID AND PAID THE CONTRACTOR FOR EXTRA FOUNDATION MATERIAL SHALL BE PER CUBIC YARD PLACED, AS NAMED IN THE PROPOSAL THEREFOR, AND SHALL INCLUDE ALL LABOR AND MATERIALS INCIDENTAL TO THE FURNISHING AND PLACING OF EXTRA FOUNDATION MATERIAL INCLUDING THE EXCAVATION OF THE MATERIAL TO BE REPLACED, SHEETING, BRACING, PUMPING, DRAINING, REMOVAL OF SURPLUS MATERIALS & GRADING OF THE EXTRA FOUNDATION MATERIAL.

STRUCTURES: ROCK EXCAVATION FOR STRUCTURES, UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS, SHALL BE MEASURED BETWEEN VERTICAL PLANES ONE (1) FOOT BEYOND THE NEAT LINES OF THE FOUNDATION OF THE STRUCTURES ON ALL SIDES, AND PARALLEL THERETO, AND FROM THE SURFACE OF THE ROCK TO THE NEAT LINES OF THE BOTTOM OF THE STRUCTURES.



GRANULAR BACKFILL, PAVEMENT & EXTRA FOUNDATION MATERIAL PAYMENT LIMITS



ROCK EXCAVATION PAYMENT LIMITS

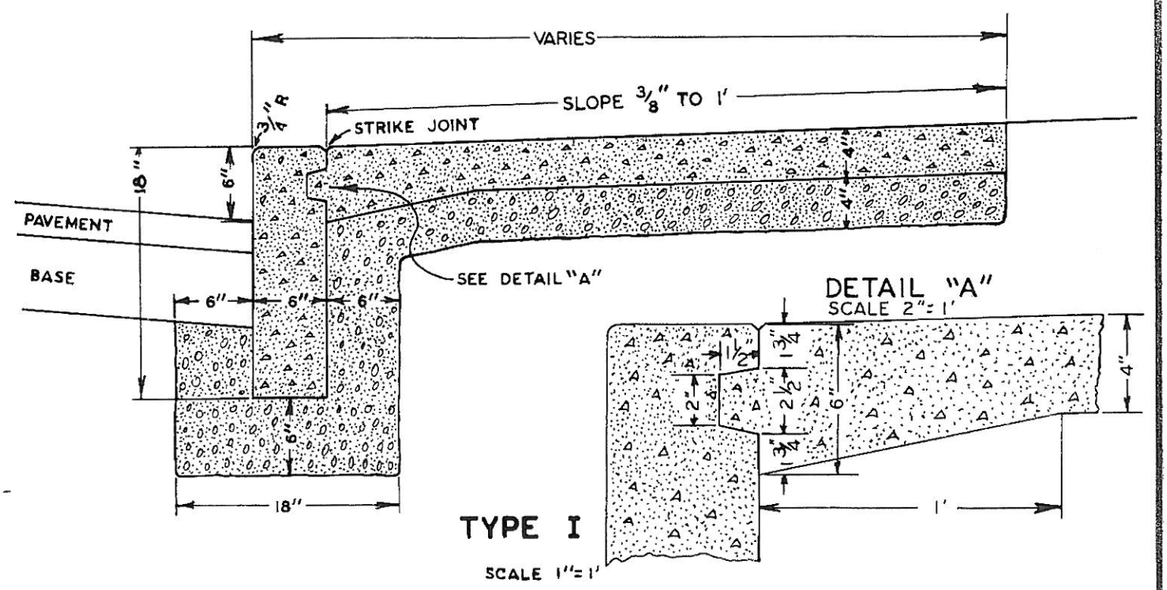
CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

PAY LIMITS
TRENCHES, ROADWAYS
& STRUCTURES

STANDARD DRAWING
APPROVED [signature] CCE. 10-12-73 DATE

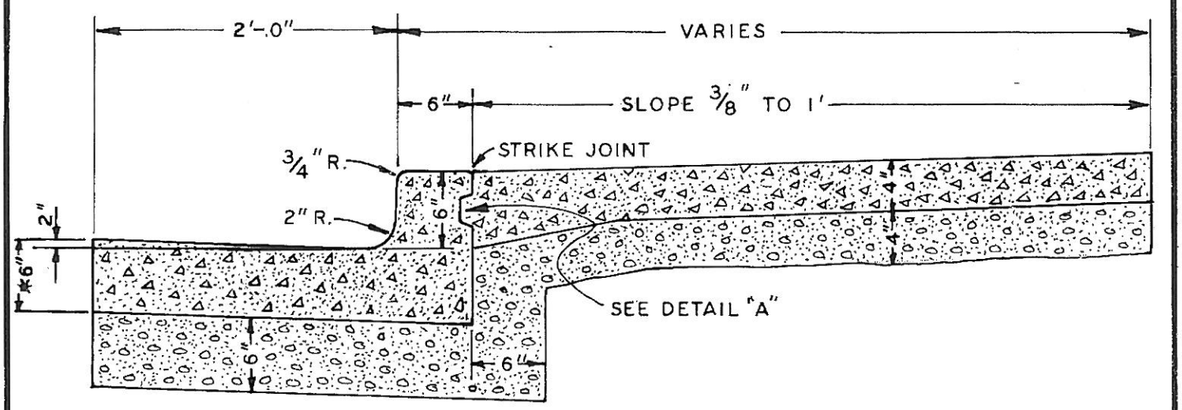
32

REV. 4-14-75



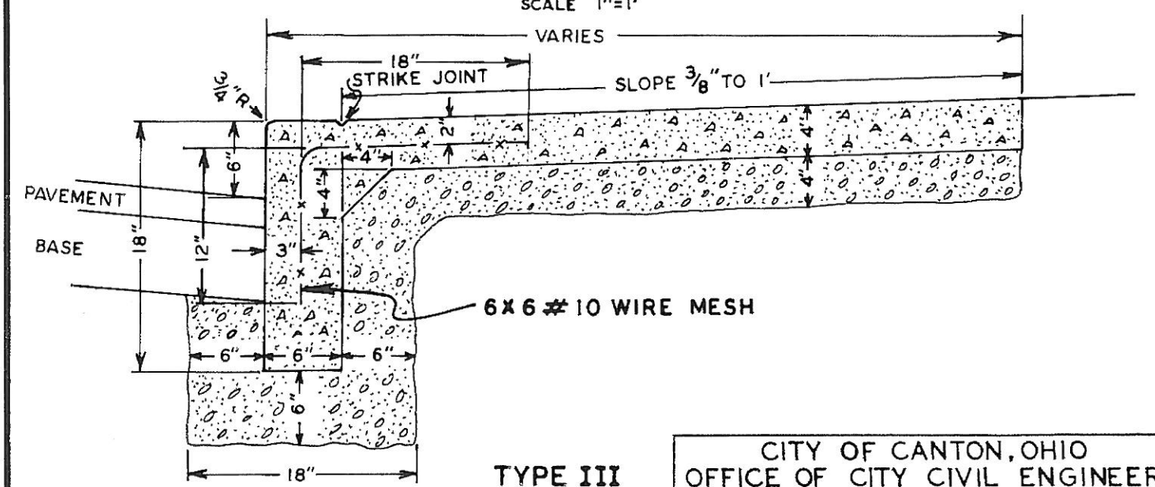
DETAIL "A"
SCALE 2" = 1'

TYPE I
SCALE 1" = 1'



*UNLESS OTHERWISE NOTED.

TYPE II
SCALE 1" = 1'



TYPE III
SCALE 1" = 1'

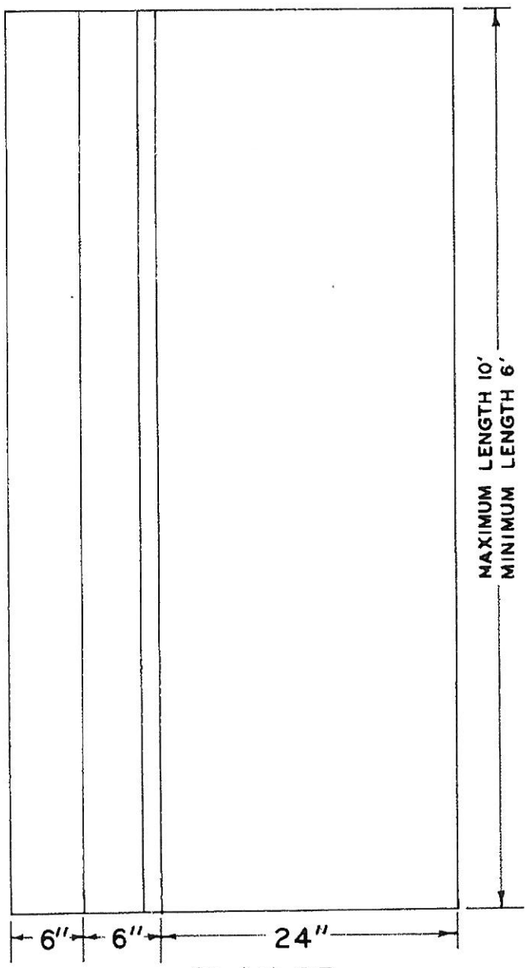
NOTE:
THE FACE OF THE REPLACEMENT CURB SHALL BE FINISHED TO THE BOTTOM OF THE BRICK OR THE TOP OF THE SUBBASE.

CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

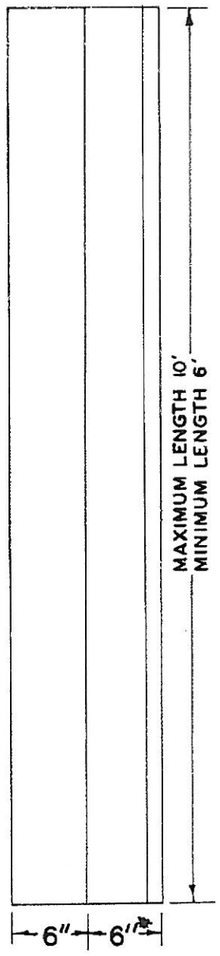
COMBINED CURB & WALK

STANDARD DRAWING 42
APPROVED [signature] CCE. 1 DATE 10-19-67

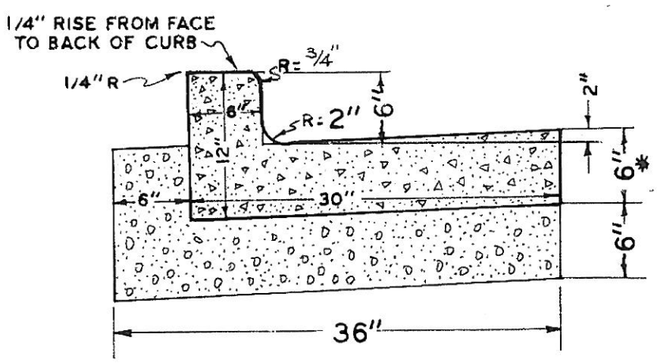
REV. 2-12-96 C.A.J. REV. 6-17-85 T.R.Y. 2-7-84, 7-9-85, 7-11-85



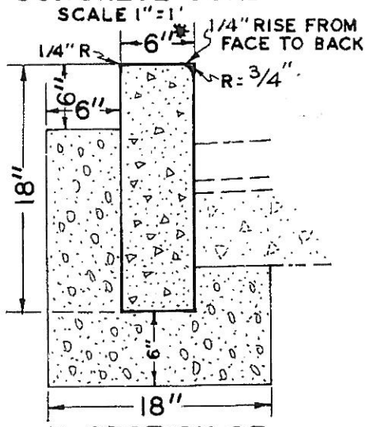
PLAN OF
CONCRETE COMB. CURB & GUTTER
SCALE 1"=1'



PLAN OF
CONCRETE CURB
SCALE 1"=1'



X-SECTION OF
CONCRETE COMB. CURB & GUTTER



X-SECTION OF
CONCRETE CURB

NOTE:

WHEN CURB OR COMB. CURB & GUTTER IS AGAINST THE WALK SEE STANDARD NO. 42.

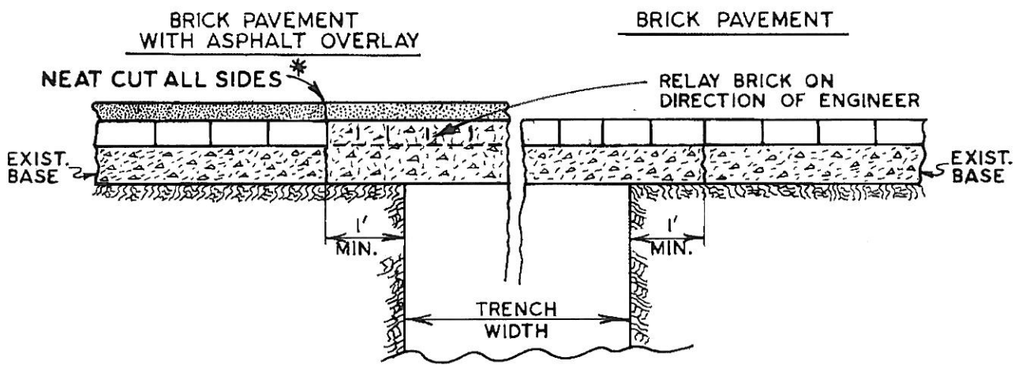
*UNLESS OTHERWISE NOTED.

CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

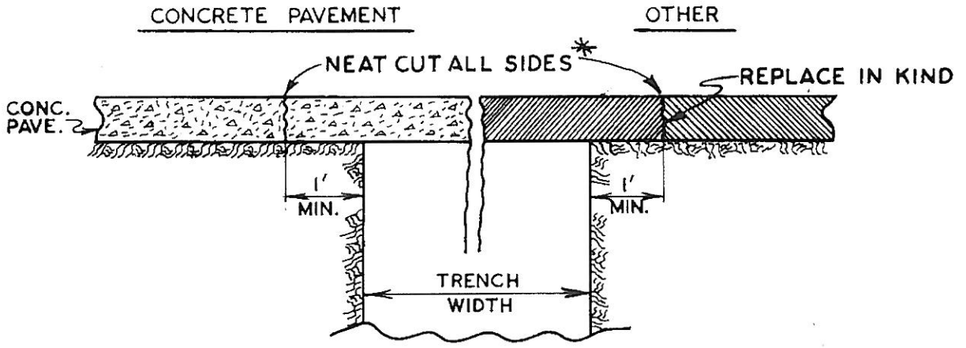
DETAIL CONC. CURB
&
CONC. COMB. CURB & GUTTER

STANDARD DRAWING
APPROVED ~~Phil~~ CCE. 10-27-69 DATE
43

REV. 2-12-96 C.A.J.
REV. 6-17-83 T.R.Y.
2-7-84 T.R.Y.



* JOINT SEALER
ASTM C-920, COLD APPLIED
ASTM D-3405, HOT APPLIED



NOTE:

ALL BACK-FILL UNDER STREET PAVEMENT SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES LOOSE DEPTH AND COMPACTED BY APPROVED MECHANICAL MEANS. ALL MATERIALS USED UNDER PAVEMENTS SHALL BE EITHER SAND OR RUN OF MINE GRAVEL OR APPROVED EXCAVATED MATERIAL IF GRANULAR. GRANULAR MATERIALS CONTAINING NO CLAY MAY BE JETTED OR PUDDLED OR PLACED IN PONDED WATER PROVIDED COMPLETE DRAINAGE IS POSSIBLE AND APPROVAL OF THE ENGINEER OBTAINED.

AFTER BACKFILL IS PLACED, ADDITIONAL WIDTH OF THE PAVEMENT SHALL BE TAKEN UP ON ALL SIDES OF THE TRENCHES OR EXCAVATION TO SUCH AN EXTENT AS TO OBTAIN A BEARING ON SOLID EARTH AT LEAST TWELVE (12) INCHES ON EACH SIDE OF THE TRENCH AND THE SAME DISTANCE OUTSIDE OF ANY OTHER EXCAVATION.

WHERE SPECIFIED OR AS REQUIRED BY THE ENGINEER, EXISTING CONCRETE SHALL BE SAWED TO A MINIMUIM DEPTH OF TWO (2) INCHES BEFORE BREAKING AND REMOVING PAVEMENT OR BASE.

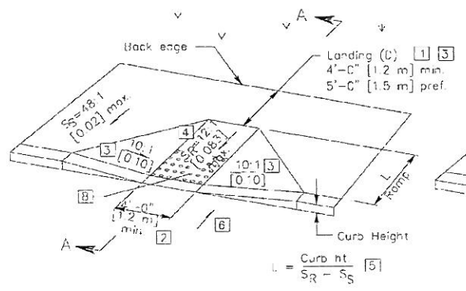
CITY OF CANTON, OHIO
OFFICE OF CITY CIVIL ENGINEER

PAVEMENT REPLACEMENT OVER UTILITY DITCHES

REV. 4-29-80
REV. 4-15-70
REV. 2-10-69

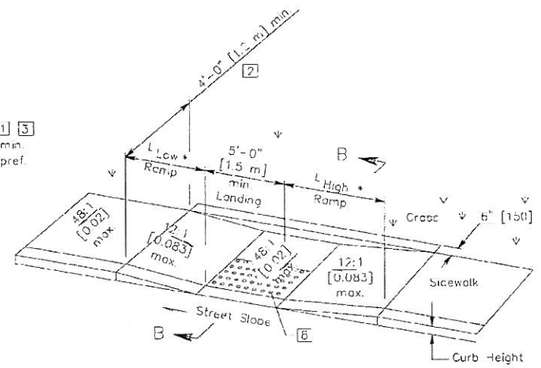
STANDARD DRAWING
APPROVED [signature] CCE. 8-26-68 DATE

44



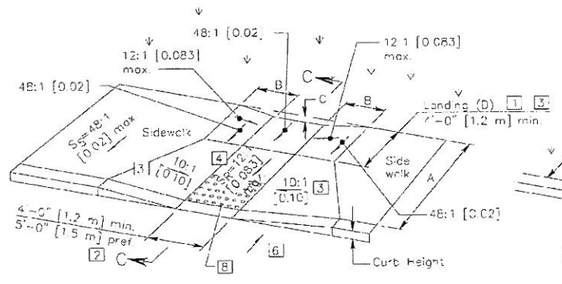
See Sht. 3/3 for SECTION A-A

PERPENDICULAR CURB RAMP DETAIL



See Sht. 3/3 for SECTION B-B

PARALLEL CURB RAMP DETAIL (DOUBLE)

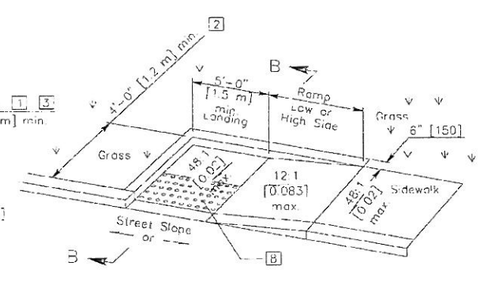


See Sht. 3/3 for SECTION C-C

COMBINED CURB RAMP DETAIL

B = C / 0.083

C = [Curb ht. + A(S_C)] - [(A-D)S_R + D(0.02)]



See Sht. 3/3 for SECTION B-B

PARALLEL CURB RAMP DETAIL (SINGLE)

Street Slope	Ramp Length @ 1"/ft [0.083]	
	L LOW SIDE *	L HIGH SIDE *
0.01	5'-5" [1.6 m]	6'-10" [2.1 m]
0.02	4'-10" [1.5 m]	7'-11" [2.4 m]
0.03	4'-5" [1.3 m]	9'-5" [2.9 m]
0.04	4'-1" [1.2 m]	11'-8" [3.6 m]
0.05	3'-9" [1.1 m]	15'-2" [4.6 m]

* Measured along the back of a 6" [150] high curb.

$$L_{HIGH} = \frac{\text{Curb ht.}}{0.083 - \text{Street Slope}}$$ 7

$$L_{LOW} = \frac{\text{Curb ht.}}{0.083 + \text{Street Slope}}$$ 7

LEGEND

1. May be reduced to 3'-0" [915] in existing sidewalks if the landing is unconstrained along the back edge.
2. May be reduced to 3'-4" [1.02 m] in existing sidewalks to better fit the walk configuration or where site conditions are restricted by narrow walks, pole foundations, drainage inlets, etc. The width may be tapered.
3. Where landing width (D) has been reduced to 3'-0" [915] the flared sides shall have a maximum slope of 12:1 [0.083].

   Flared sides are not required where the edges of a curb ramp are protected by landscaping or other barriers to travel by wheel chair users or pedestrians across the edge of the curb ramp. However, if the flared sides are used in these areas, they may be of any slope.
4. The slope of the ramp toward the curb is preferred to be 12:1 [0.083] or flatter relative to the horizontal, but the maximum slope shall be 12:1 [0.083] relative to the existing or proposed walk slope.

   In existing sidewalks, where the maximum ramp slope (S_R) is not feasible, it may be reduced as follows:

   A) 10:1 [0.10] for a max. rise of 6" [150].
   B) 8:1 [0.125] for a max. rise of 3" [75].
   C) 6:1 [0.167] over a max. run of 2'-0" [610] for historic areas where a flatter slope is not feasible.
5. The minimum length of a perpendicular ramp is 6' [2.0 m] from the back of a 6" [150] curb and may be increased where feasible to obtain a flatter ramp slope or to better blend with the walk configuration.
6. Cutter counter slopes at the foot of perpendicular curb ramps should not exceed 20:1 [0.05] over a distance of 2'-0" [610] from the curb.
7. Dimensions derived by equation are nominal. Construct ramps to meet required slopes and existing conditions.
8. Detectable Warnings (truncated domes) are to be installed in the location shown. Dimensions of the domes are 24" [610] from the back of the curb by the width of the ramp. See NOTES on sheet 3.

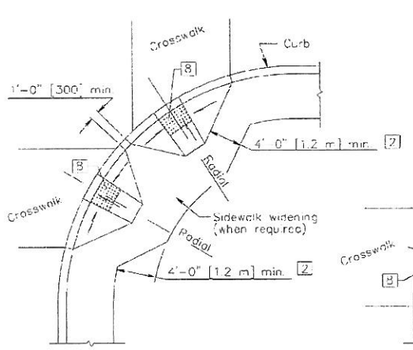
7-12-02

CURB RAMPS WITH TRUNCATED DOMES

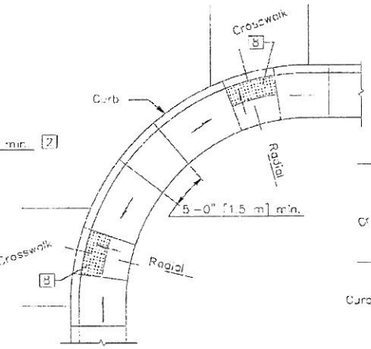
ODOT PLAN INSERT SHEET DP-7.1

1/3

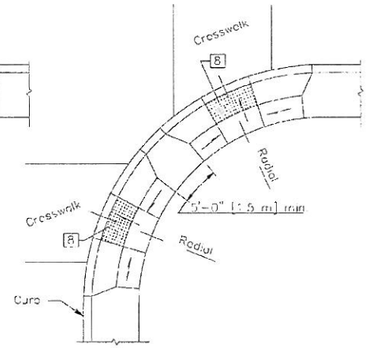
OFFICE OF THE CITY ENGINEER CANTON, OHIO DANIEL J. MOEGLIN, P.E., CITY ENGINEER 2436 30th STREET N.E. 44705 (330)489-3381	STANDARD DRAWING NO. 46 WHEELCHAIR RAMP	REVISIONS DESCRIPTION / DATE / BY	DRAWN BY: RMB	DATE: JUN 2005
			APP'D BY:	H. SCALE: NONE
			FIELD BK:	V. SCALE:
			DWG# ce_46.dwg	SHEET 1 OF 3



DESIGN A
PERPENDICULAR RAMP



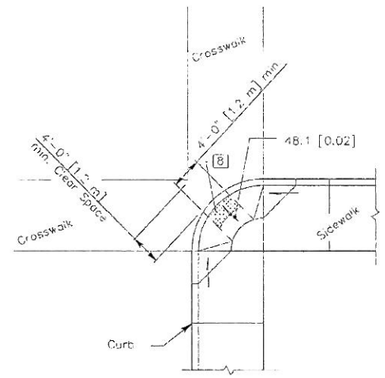
DESIGN B
PARALLEL RAMP



DESIGN C
COMBINATION RAMP

CORNER CURB RAMP DESIGNS

(See Curb Ramp Details on Sht. 1/3 for additional requirements.)

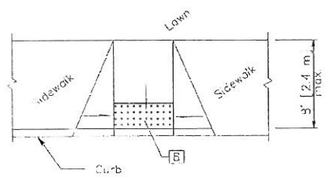


DESIGN D
DIAGONAL RAMP

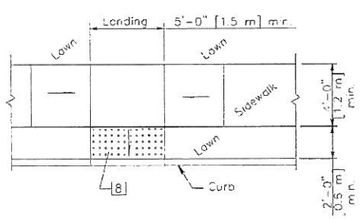
Use in existing walks only and when site constraints prohibit other designs. The diagonal ramp may be perpendicular, parallel or combination.

Avoid using where curb radii are less than 20'-0" [6.0 m].

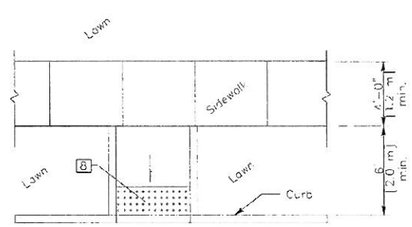
For LEGEND, See sheet 1



DESIGN E
PERPENDICULAR RAMP



DESIGN F
PARALLEL RAMP



DESIGN G
PERPENDICULAR RAMPS
w/o FLARES

MID BLOCK CURB RAMP DESIGNS

(See Curb Ramp Details on Sht. 1/3 for additional requirements.)

CURB RAMPS WITH TRUNCATED DOMES

7-12-02

0001 PLAN NO. 1 SHEET (SP-7.1)

2/3

OFFICE OF THE CITY ENGINEER CANTON, OHIO DANIEL J. MOEGLIN, P.E., CITY ENGINEER 2436 30th STREET N.E. 44705 (330)489-3381	STANDARD DRAWING NO. 46 WHEELCHAIR RAMP	REVISIONS DESCRIPTION / DATE / BY	DRAWN BY: RMB	DATE: JUN 2005
			APP'D BY:	H. SCALE: NONE
			FIELD BK:	V. SCALE:
			DWG# ce_46.dwg	SHEET 2 OF 3

NOTES

SURFACE TEXTURE: Texture of concrete surfaces shall be oblained by coarse brooming transverse to the ramp slopes and shall be rougher than adjacent walk.

TRUNCATED DOMES: Install detectable warnings (truncated domes) for a distance of 24" [610] from the back of the curb for the entire width of the ramp opening as shown on details on Sheet 1.

Pavers will meet ASTM C 902 Class SX, Type 1, or C 936, or C 1272 Type R. (SEE OPTION 4 FOR NON-BRICK)

Acceptable manufacturers and products are:

1) Whitacre-Greer Fireproofing Company, 1400 S. Mahoning Ave, Alliance, OH, 44601, (800) WG PAVER ADA Paver, 4"x8"x2-1/4", Clear Red (Rustic) #30.

2) Hanover Architectural Products, 240 Bender Rd., Hanover, PA. 17331, (717) 637-0500 Detectable Warning Paver, 12"x12"x2", or 24"x24"x2", Red or Quarry Red.

3) Endicott Clay Products, PO Box 17, Fairbury, NE, 68352, (402) 729-5804 Handicap Detectable Warning Paver, 4"x8"x2-1/4", Red Blend.

4) The Belden Brick Company
PO Box 20910, Canton, OH 44701 330-456-0031
City Line ADA Paver, Regimental Red
2-1/4"x4"x8" or 2-1/4"x8"x8"

5) Armorcast Products Company
North Hollywood, CA 818-982-3800
Armorcast Detectable Warning Panels (Wet Set Panels)
24"x24", 24"x36", 24"x48"; also 6'-15' Radius
Polymer Concrete, Red Brick color

Pavers will laid on top of a 4" [100] unreinforced concrete base. Setting bed and ~~joints to be~~ mortared in accordance with manufacturer's instruction, or with a maximum 1/2 " [13] thick bed of latex modified cement mortar. Mortar joints to a width not greater than 5/32 " [4] and not less than 1/16 " [1.5]. Pavers shall not be directly touching each other unless they have spacing bars.

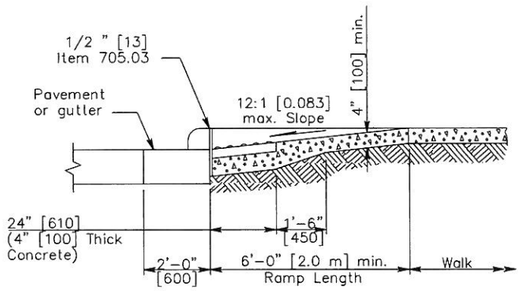
~~Mortared joints are to be flush with top surface and struck so as to give a smooth surface.~~ Pavers shall be laid such that joints are level with adjoining joints so as to provide a smooth transition from brick to brick and brick to concrete surface.

SWEEP SAND AND CEMENT MIXTURE (3:1) INTO JOINTS TO REFUSAL.

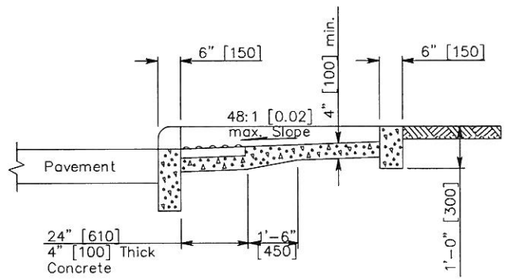
The surface of any two adjacent units should not differ by more than 1/8 " [3] in height. Bricks shall be placed in a running bond pattern. Face of all brick shall be clean of cement and protected so as to avoid chipping during constructionn.

EXPANSION JOINTS: shall be provided in the curb ramp as extensions of walk joints and consistent with Item 608.03 requirements for a new concrete walk. A 1/2 " [13] Item 705.03 expansion joint filler shall be provided around the edge of ramps built in existing concrete walk. Lines shown on this drawing indicate the ramp edge and slope changes and are not necessarily joint lines.

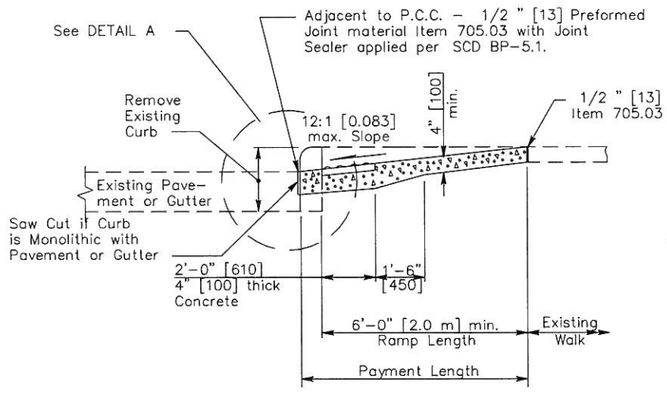
PAYMENT: Walk and curb, Items 608 and 609, shall be measured through the curb ramp area paid for under their respective Items. Item 608 - Curb Ramp, As Per Plan, Each constructed in new curb and walk shall include the cost of any additional materials and installation (including truncated domes), grading, forming and finishing. Item 608 - Curb Ramp. As Per Plan, Square Foot [Meter], constructed in existing curb and walk shall include the cost of furnishing and installing all materials (including truncated domes), grading, forming, and finishing of the curb and walk of the curb ramp. Removal of existing curb and walk shall be paid for under Item 202.



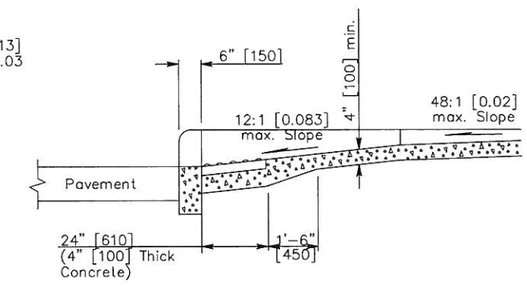
SECTION A-A
NORMAL DETAIL
See Sheet 1 of 3.
(Gutter shown)



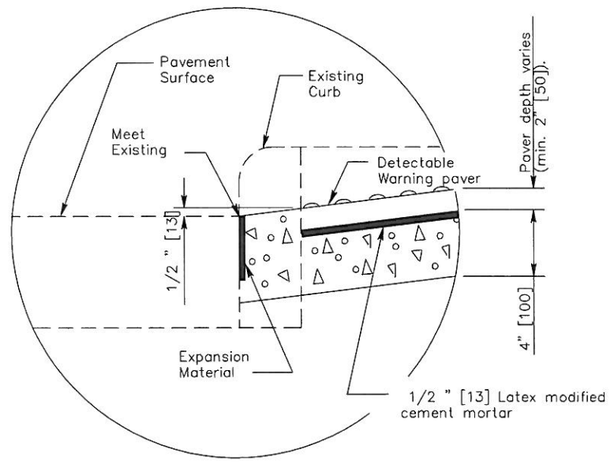
SECTION B-B
See Sheet 1 of 3.



SECTION A-A
EXISTING WALK DETAIL
See Sheet 1 of 3.



SECTION C-C
See Sheet 1 of 3.



DETAIL A

7-12-02

CURB RAMPS WITH TRUNCATED DOMES

ODOT PLAN INSERT SHEET BP-7.1

3/3

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th STREET N.E. 44705 (330)489-3381

STANDARD DRAWING NO. 46
WHEELCHAIR RAMP

REVISIONS		
DESCRIPTION	DATE	BY
PAVER JOINTS	6/2005	RMB
ARMORCAST PANEL	5/2009	RMB
BELDEN BRICK	6/2009	RMB

DRAWN BY: RMB	DATE: JUN 2005
APP'D BY:	H. SCALE: NONE
FIELD BK:	V. SCALE:
DWG# ce_46.dwg	SHEET 3 OF 3